United Nations A/66/70

General Assembly

Distr.: General
22 March 2011

Original: English

Sixty-sixth session
Item 77 (a) of the preliminary list*
Oceans and the law of the sea

Oceans and the law of the sea

Report of the Secretary-General

Summary

The present report has been prepared pursuant to the request made by the General Assembly, in paragraph 167 of its resolution 65/37 A, that the Secretary-General include, in the annual report on oceans and the law of the sea, information on environmental impact assessments undertaken with respect to planned activities in areas beyond national jurisdiction, including capacity-building needs, on the basis of information requested from States and competent international organizations. The report also contains information on activities carried out by relevant organizations since the report of the Secretary-General of 19 October 2009 (A/64/66/Add.2), including with regard to the scientific, technical, economic, legal, environmental and socio-economic aspects of the conservation and sustainable use of marine biodiversity beyond areas of national jurisdiction. It also provides information on possible options and approaches to promote international cooperation and coordination and on key issues and questions where more detailed background studies would facilitate consideration by States of these issues.

* A/66/50.

11-27337 (E) 270411

Please recycle

Contents

		Page
I.	Introduction	4
II.	Recent activities of the United Nations and other relevant international organizations, including on the scientific, technical, economic, legal, environmental and socio-economic aspects of the conservation and sustainable use of marine biodiversity beyond areas of national jurisdiction	8
A.	Marine science and technology	8
1.	Marine science	9
2.	Marine technology	11
B.	Fishing activities and developments related to marine living resources	12
1.	Illegal, unreported and unregulated fishing	13
2.	By-catch and adverse impacts on marine biodiversity	14
3.	Adverse impacts of bottom fisheries	15
C.	Shipping activities	16
1.	Oil pollution and other discharges	16
2.	Air pollution	17
3.	Greenhouse gas emissions	17
4.	Chemical pollution	18
D.	Disposal of wastes	18
E.	Land-based activities	19
F.	Mineral exploration and exploitation	20
G.	Research on, and exploitation of, marine genetic resources	20
H.	Other activities, including new uses	23
1.	Ocean fertilization	24
2.	Carbon sequestration	24
3.	Renewable energy	25
4.	Submarine cables	26
5.	Tourism	26
6.	Aquaculture	27
I.	Activities to address cross-cutting impacts	28
1.	Marine debris	28
2.	Invasive alien species	29
3.	Climate change	30
4.	Ocean noise	31

J. Management tools 32
1. Integrated management and ecosystem approaches 32
2. Environmental impact assessments 35
3. Area-based management tools, in particular marine protected areas 42
K. Governance 50
L. Capacity-building and transfer of technology 52
III. Possible options and approaches to promote international cooperation and coordination 55
A. Information base 55
B. Capacity-building and technology transfer 57
C. Implementation 58
D. Integrated management and ecosystem approaches 59
E. Environmental impact assessments 60
F. Area-based management tools 61
G. Marine genetic resources 62
H. Cross-sectoral cooperation and coordination 63
IV. Key issues and questions for which more detailed background studies would facilitate their consideration by States 64
V. Conclusions 66

I. Introduction

1. Biological diversity (biodiversity)[1] is vitally important for human well-being, since it underpins the wide range of ecosystem services on which life depends.[2] The oceans are characterized by a great diversity in terms of physical features, ecosystems and life, ranging from shallow, near-shore ecosystems and species to the deepest and most remote features, such as trenches and abyssal plains, both within and beyond areas of national jurisdiction. While the specific role of some of these ecosystems is still poorly understood, it is generally recognized that marine ecosystems and biodiversity have critical functions in the natural cycle and in supporting life on Earth. Marine ecosystems and biodiversity, including beyond areas of national jurisdiction, also provide a source of livelihood for billions of people around the world.

2. Today, however, oceans and coasts are among the most threatened ecosystems in the world.[3] In the context of the celebration of the International Year of Biodiversity in 2010, a number of reports showed that the 2010 target of achieving a significant reduction in the current rate of biodiversity loss as a contribution to poverty alleviation had not been met at the global level. Notwithstanding increased investment in conservation planning and action, the major drivers of biodiversity loss, including high rates of consumption, habitat loss, invasive species, pollution and climate change, are not yet being addressed on a scale sufficient to affect overall negative trends in the state of biodiversity.[4]

3. No marine areas are unaffected by human activities, and almost half of them are strongly affected by multiple drivers of change. The demand for seafood continues to grow as the population increases. Wild fish stocks continue to come under pressure, and aquaculture is expanding. Climate change causes fish populations to be redistributed towards the poles, and tropical oceans become comparatively less diverse. Sea level rise threatens many coastal ecosystems. Ocean acidification weakens the ability of shellfish, corals and marine phytoplankton to form their skeletons, threatening to undermine marine food webs as well as reef structures. Increasing nutrient loads and pollution intensity the incidence of coastal dead zones, and globalization creates more damage from alien invasive species transported in ship ballast water.[5]

4. The cumulative impacts of fishing, pollution and climate change are on the verge of causing substantial, albeit poorly understood, mass extinctions of marine

---

[1] Biological diversity is defined in article 2 of the Convention on Biological Diversity as "the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems."

[2] *The Millennium Development Goals Report 2010* (United Nations publication, Sales No. E.10.I.7).

[3] Millennium Ecosystem Assessment, *Ecosystems and Human Well-being: Synthesis* (Washington, D.C., World Resources Institute, 2005).

[4] See note 2 above. See also secretariat of the Convention on Biological Diversity, "Global Biodiversity Outlook 3" (2010); United Nations Environment Programme (UNEP), *Global Synthesis — A report from the Regional Seas Conventions and Action Plans for the Marine Biodiversity Assessment and Outlook Series* (2010).

[5] Secretariat of the Convention on Biological Diversity, "Global Biodiversity Outlook 3" (2010).

life, with consequent resource and security implications for human communities.[6] The irreparable loss of biodiversity will hamper efforts to meet other development goals, especially those related to poverty, hunger and health, by increasing the vulnerability of the poor and reducing their options for development.[7]

5. While the human activities and pressures on marine biodiversity continue to be at their most intense in coastal areas, a number of factors have spurred a rise in human activities farther away from the coast. These factors include a decline in — and in some cases the collapse of — shallow water fish stocks, the development of new technologies to explore and exploit seabed resources, the search for new alternative sources of energy, and the more stringent regulation of certain activities in areas within national jurisdiction. Growing scientific and commercial interest in areas heretofore largely unexplored are cumulatively affecting marine biodiversity and biological resources. The Census of Marine Life determined that in the past the disposal of waste and litter had had the greatest impacts in the deep sea. Today, fisheries, hydrocarbon and mineral extraction are having the greatest impacts. It has been predicted that climate change will have the greatest effects in future.[8] The expanded scientific understanding of ocean threats also illustrates how the isolated impacts of individual sectors become concentrated, move beyond enclosed areas and seas and interact synergistically, affecting not only the local species and human communities that are dependent on coastal ecosystems but also, and increasingly, the larger natural systems and human societies of which they form a part.[9]

6. Cognizant of the richness and life-supporting functions of the oceans and their ecosystems, States, at the World Summit on Sustainable Development in 2002, committed to maintaining the "productivity and biodiversity of important and vulnerable marine and coastal areas, including in areas within and beyond national jurisdiction".[10] By paragraph 73 of its resolution 59/24, the General Assembly established the Ad Hoc Open-ended Informal Working Group to study issues relating to the conservation and sustainable use of marine biological diversity beyond areas of national jurisdiction. The Working Group was mandated to: (a) survey the past and present activities of the United Nations and other relevant international organizations with regard to the conservation and sustainable use of marine biological diversity beyond areas of national jurisdiction; (b) examine the scientific, technical, economic, legal, environmental, socio-economic and other aspects of these issues; (c) identify key issues and questions where more detailed background studies would facilitate consideration by States of these issues; and (d) indicate, where appropriate, possible options and approaches to promote international cooperation and coordination for the conservation and sustainable use of marine biological diversity beyond areas of national jurisdiction. The Working

[6] UNEP, *Global Synthesis — A report from the Regional Seas Conventions and Action Plans for the Marine Biodiversity Assessment and Outlook Series* (2010).

[7] See note 2 above.

[8] Census of Marine Life, "Scientific results to support the sustainable use and conservation of marine life — a summary of the Census of Marine Life for decision-makers" (2011).

[9] Agence des aires marines protégées, the World Commission on Protected Areas of the International Union for the Conservation of Nature, the World Conservation Monitoring Centre of UNEP, the Nature Conservancy, the United Nations University and the World Conservation Strategy, *Global Ocean Protection: Present Status and Future Possibilities* (2010).

[10] See *Report of the World Summit on Sustainable Development, Johannesburg, South Africa, 26 August-4 September 2002* (United Nations publication, Sales No. E.03.II.A.1 and corrigendum), chap. I, resolution 2, annex, para. 32 (a).

Group was assisted in its consideration of these issues by a report prepared by the Secretary-General pursuant to paragraph 74 of resolution 59/24 (A/60/63/Add.1). The report of the Working Group is contained in document A/61/65.

7. In 2006, in paragraph 91 of its resolution 61/222, the General Assembly requested the Secretary-General to convene, in accordance with paragraph 73 of resolution 59/24, a meeting of the Working Group in 2008 to consider: (a) the environmental impacts of anthropogenic activities on marine biological diversity beyond areas of national jurisdiction; (b) coordination and cooperation among States as well as relevant intergovernmental organizations and bodies for the conservation and management of marine biological diversity beyond areas of national jurisdiction; (c) the role of area-based management tools; (d) genetic resources beyond areas of national jurisdiction; and (e) whether there was a governance or regulatory gap, and if so, how it should be addressed. In its deliberations, the Working Group was assisted by a report of the Secretary-General prepared pursuant to resolution 61/222 (A/62/66/Add.2). The outcome of the 2008 meeting is set out in document A/63/79 and Corr.1.

8. In 2008, in paragraph 127 of its resolution 63/111, the General Assembly requested the Secretary-General to convene, in accordance with paragraph 73 of resolution 59/24 and paragraphs 79 and 80 of resolution 60/30, a meeting of the Working Group in 2010 to provide recommendations to the Assembly. This request was reiterated in paragraph 146 of resolution 64/71. In paragraph 142 of resolution 64/71, the Assembly noted the discussion on the relevant legal regime on marine genetic resources in areas beyond national jurisdiction in accordance with the United Nations Convention on the Law of the Sea, and called upon States to further consider this issue in the context of the mandate of the Working Group with a view to making further progress on the issue. The Assembly also invited States to further consider, at the 2010 meeting of the Working Group, in the context of its mandate, issues of marine protected areas and environmental impact assessment processes. In its deliberations, the Working Group was assisted by a report of the Secretary-General prepared pursuant to resolution 63/111 (A/64/66/Add.2). The recommendations of the Working Group address: the strengthening of the information base; capacity-building and technology transfer; cooperation and coordination in implementation; cooperation and coordination for integrated ocean management and ecosystem approaches; environmental impact assessments; area-based management tools, in particular marine protected areas; marine genetic resources; and the way forward. The recommendations, together with the Co-Chairpersons' summary of discussions, are contained in document A/65/68.

9. In paragraph 162 of its resolution 65/37 A, the General Assembly endorsed the recommendations of the Working Group. The Assembly also requested the Secretary-General to convene, in accordance with paragraph 73 of resolution 59/24 and paragraphs 79 and 80 of resolution 60/30, with full conference services, a meeting of the Working Group, to take place from 31 May to 3 June 2011, to provide recommendations to the General Assembly.[11] The Assembly encouraged the Working Group to improve progress on all outstanding issues on its agenda (para. 164); noted the discussion on the relevant legal regime on marine genetic resources in areas beyond national jurisdiction in accordance with the Convention, and called upon States to further consider this issue in the context of the mandate of the

[11] Resolution 65/37 A, para. 163.

Working Group, taking into account the views of States on Parts VII and XI of the Convention, with a view to making further progress on this issue (para. 165); and invited States to further consider, at the 2011 meeting of the Working Group, in the context of its mandate, issues related to marine protected areas and environmental impact assessment processes (para. 166). In paragraph 167, the Assembly requested the Secretary-General to include, in the annual report on oceans and the law of the sea, information on environmental impact assessments undertaken with respect to planned activities in areas beyond national jurisdiction, including capacity-building needs, on the basis of information requested from States and competent international organizations.

10. The present report, which includes the information requested in paragraph 167, is aimed at assisting the Working Group in its deliberations at its upcoming meeting. Sections II, III and IV address, respectively: recent activities of the United Nations and other relevant international organizations, including their work on scientific, technical, economic, legal, environmental and socio-economic aspects of the topic; key issues and questions whose consideration by States would benefit from more detailed background studies; and possible options and approaches to promote international cooperation and coordination. The report reflects information provided by States and the relevant international bodies at the request of the Secretariat. Notably, the following eight States submitted information: Australia, Brazil, China, El Salvador, Jamaica, Namibia, New Zealand and Norway. The European Union also contributed to the report. The following organizations and other entities submitted information: the secretariat of the Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Neighbouring Atlantic Area; the secretariat of the Convention on Biological Diversity; the secretariat of the Convention on International Trade in Endangered Species of Wild Fauna and Flora; the Commission for the Conservation of Antarctic Marine Living Resources; the Food and Agriculture Organization of the United Nations (FAO); the Inter-American Tropical Tuna Commission; the International Commission for the Conservation of Atlantic Tunas; the International Hydrographic Organization (IHO); the International Maritime Organization (IMO); the Intergovernmental Oceanographic Commission (IOC) of the United Nations Educational, Scientific and Cultural Organization (UNESCO); the International Seabed Authority (the Authority); the Islamic Development Bank; the Northwest Atlantic Fisheries Organization (NAFO); the North-East Atlantic Fisheries Commission; and UNESCO. The Economic Commission for Africa, the United Nations Environment Programme (UNEP) and the United Nations Development Programme (UNDP) also contributed to the report. The Secretary-General wishes to thank the above-mentioned Member States, organizations and entities for their contributions.

11. The present report should be read in conjunction with previous reports of the Secretary-General on oceans and the law of the sea (in particular A/65/69 and Add.2) and on sustainable fisheries (in particular A/61/154, A/62/260 and A/64/305), and the reports on meetings of the United Nations Open-ended Informal Consultative Process on Oceans and the Law of the Sea at which issues relevant to the conservation and sustainable use of marine biodiversity, including in areas beyond national jurisdiction, were discussed (A/56/121, A/57/80, A/58/95, A/59/122, A/60/99, A/61/156, A/62/169 and A/65/164).

II. Recent activities of the United Nations and other relevant international organizations, including on the scientific, technical, economic, legal, environmental and socio-economic aspects of the conservation and sustainable use of marine biodiversity beyond areas of national jurisdiction

12. The information contained in the present section is based mainly on contributions received from relevant international bodies, as well as other sources readily available in the public domain. However, in view of the limited information available on key aspects, such as economic and socio-economic aspects, the report is not intended to provide an exhaustive survey of recent developments. A 2009 report on the economics of ecosystems and biodiversity concluded that a large body of empirical studies is now available on the values attached to a wide range of ecosystem services found in various regions of the world and in various socio-economic conditions. However, coverage is uneven and there are still significant gaps in the scientific and valuation literature on marine ecosystems.[12] Furthermore, while care has been taken in the presentation of the information, to use the terminology of the United Nations Convention on the Law of the Sea, the terms "open ocean" and "deep sea" are being increasingly used by scientists and policymakers.[13]

A. Marine science and technology

13. While increased efforts are being made to develop our knowledge and understanding of marine ecosystems, the limited amount of scientific knowledge of areas beyond national jurisdiction means that the extent of impacts on and the productivity limits and recovery time of ecosystems and biodiversity in those areas cannot be predicted.[14] The 2010 meeting of the Ad Hoc Open-ended Working Group noted the urgent need for more research, in particular of an interdisciplinary nature, on the state of marine biodiversity beyond areas of national jurisdiction. The view was expressed that increased scientific research on the deep and open oceans,[15] which are the least-known areas, was particularly necessary (A/65/68, para. 31).

---

[12] *The Economics of Ecosystems and Biodiversity for National and International Policy Makers — Summary: Responding to the Value of Nature* (2009), available from www.teebweb.org.

[13] For example, a report by the Intergovernmental Oceanographic Commission (IOC) of the United Nations Educational, Scientific and Cultural Organization (UNESCO) on biogeographic classification states: "'Open ocean' and 'deep seabed' are non-legal terms commonly understood by scientists to refer to the water column beyond the continental shelf. Open ocean and deep seabed habitats may occur in areas within national jurisdiction in States with a narrow continental shelf, or where the continental shelf is intersected by underwater canyons." See *Global Open Oceans and Deep Seabed (GOODS): Biogeographic Classification*, IOC Technical Series No. 84 (2009). The term "deep sea" is defined by UNEP as waters and sea-floor areas below 200 m, where sunlight penetration is too low to support photosynthetic production. See UNEP, "Deep-Sea Biodiversity and Ecosystems: a scoping report on their socio-economy, management and governance" (2007). See also annex I to Convention on Biological Diversity decision IX/20 on marine and coastal biological diversity.

[14] Contribution of IOC.

[15] See note 13 above.

14. The essential role of scientific knowledge as a basis for sound decision-making and the need to strengthen the linkages between research and policymaking were highlighted at the meeting of the Working Group in 2010 (A/65/68, para. 35). The Working Group recommended that States and competent international organizations conduct further marine scientific research and develop and strengthen mechanisms that facilitate the participation of developing countries in marine scientific research (A/65/68, paras. 4 and 5). Furthermore, the Working Group recommended that States and competent international organizations use the best available scientific information in the development of sound policy (A/65/68, para. 3). It also recommended that the General Assembly recognize the need to consolidate and harmonize data, as appropriate, including by improving the functional links among databases (A/65/68, para. 6). The Assembly subsequently endorsed those recommendations.[16]

15. Examples of recent activities in the area of marine science and technology relevant to the conservation and sustainable use of marine biodiversity beyond areas of national jurisdiction are presented below.

1. Marine science

16. In its resolution 65/37 A, the General Assembly called upon States, individually or in collaboration with each other, to continue to strive to improve understanding and knowledge of the oceans and the deep sea, including the extent and vulnerability of deep sea biodiversity and ecosystems, by increasing marine scientific research in accordance with the United Nations Convention on the Law of the Sea (para. 187).

17. A number of marine scientific research projects have been carried out by States at the international and regional levels. In addition, China reported that in 2010, in accordance with the relevant provisions of its contract with the Authority as a pioneer investor, the China Ocean Mineral Resources Research and Development Association had conducted oceanographic and environmental-baseline research, and that it had also carried out analysis and testing of materials and samples gathered on-site in the contract area in 2009. It investigated such phenomena as the size-fractionated structure of chlorophyll *a*, the abundance and species configuration of small benthic organisms, the composition and origin of low-density phosphates and suspended particulate mineral matter, and the distribution and output of surface biogenetic particulate matter. The Association also performed biological and chemical baseline research. Moreover, China also cooperates with the Authority by providing experts for the project on a geological model for the Clarion-Clipperton Fracture Zone.[17]

18. A sustained research effort in support of decision-making was represented by the decade-long Census of Marine Life, a partnership of 2,700 scientists from more than 80 States, the results of which were published in October 2010.[18] By sampling the full range of marine taxa from pole to pole and from surface to abyssal depths, the Census has discovered many new species and previously unknown habitats,

[16] Resolution 65/37 A, para. 162.

[17] Contribution of China. See also ISBA/16/A/2.

[18] See http://www.coml.org/press-releases-2010. See also A/64/66/Add.2, para. 16, and A/65/69/Add.2, para. 208.

especially in the deep sea and coral reefs.[19] The Census has drawn baselines to assist States in selecting areas and strategies for the greater protection of marine life. Furthermore, in addition to the Ocean Biogeographic Information System,[20] the Census spurred the establishment of various databases and visualizations.[21]

19. Nevertheless, at the conclusion of the Census, it was estimated that in well-researched regions of high species richness, 25 to 80 per cent of species remained undescribed. The Census database still had no records, for more than 20 per cent of the ocean's volume, and very few for vast areas.[22] Marine scientists remain unable to provide good estimates of the total number of species in any of the three domains of life in the oceans (Archaea, Bacteria and Eukarya).[23] The Census noted, inter alia, that developing monitoring strategies through existing observing systems, time-series stations and long-term ecological research sites may enable the prediction of changes in microbial populations as a consequence of natural and anthropogenic climate change, harmful algal blooms and, ultimately, human impact on biodiversity in the oceans.[24] In its summary of the results for decision-makers, the Census summarized the discoveries, tools and technologies that are most relevant to policymakers, resource managers and Government officials. It also discussed findings about marine habitat degradation and rehabilitation.[25]

20. The secretariat of IOC, in its contribution, suggested the use of proxies and remote observations to infer the distribution and abundance of habitats and biodiversity as one possible methodology for addressing biodiversity conservation. For example, statistical proxies and components could be obtained from oceanographic parameters acquired within the framework of the Global Ocean Observing System and the Oceanic Biogeographic Information System and from the Global Open Oceans and Deep Seabed Biogeographic Classification System.[26] That classification system could assist in gaining an understanding of the scales for applying an ecosystem approach to area-based management and identifying areas representative of major ecosystems. Biogeographic classification systems are hypothesis-driven exercises that are intended to reflect biological units with a degree of common history and coherent response to perturbations and management actions.[27] Another recognized proxy for the existence of biodiversity hotspots is sea floor topology, structure and complexity of cover, which can be obtained by remote sensing and detailed sea floor acoustic mapping. The Global Ocean Observing System has focused on global climate monitoring in the open oceans, but is now actively integrating new biogeochemistry and ecosystem variables.[28]

---

[19] Census of Marine Life, *Life in the World's Oceans: Diversity, Distribution and Abundance* (2010).

[20] The Ocean Biogeographic Information System maintains the Census dataset. See http://www.iobis.org.

[21] See, for example, the Microbial Oceanic Biogeographic Information System database, available at http://icomm.mbl.edu/microbis, as well as www.comlmaps.org for maps and visualizations of Census data and information.

[22] See http://www.coml.org/press-releases-2010.

[23] See A/60/63/Add.1, paras. 13-57.

[24] See note 19 above.

[25] See note 8 above.

[26] See http://ioc-unesco.org/index.php?option=com_content&task=view&id=146&Itemid=76.

[27] See http://www.iode.org/index.php?option=com_oc&task=viewDocumentRecord&docID=3931.

[28] See A/65/69/Add.2, para. 136.

21. UNDP, in its contribution, reported on the first comprehensive biological survey ever conducted on the pelagic ecosystems associated with biodiversity hotspots around five seamounts located in areas beyond national jurisdiction in the southern Indian Ocean. The Seamounts Project was begun in 2009 and is managed by the International Union for the Conservation of Nature (IUCN) and funded by the Global Environment Facility (GEF). It focuses on seamount ecosystems known to be hotspots of biodiversity on the Southwest Indian Ocean Ridge with the aim of improving scientific understanding of seamount ecosystems and building capacity; enhancing governance frameworks for high seas resources conservation and management; identifying management and compliance options for deep and high seas biodiversity in the southern Indian Ocean, based on precautionary and ecosystem approaches; and raising awareness and sharing knowledge.[29] To date, nearly 7,000 samples have been gathered. The ongoing taxonomic analysis has identified more than 200 species of fish and 74 species of squid. Another important finding indicated that the convergence zone between the warm tropical waters of the North and the cold waters of the Southern Ocean might be a very important area for juvenile fish, and might therefore require concentrated conservation efforts.

22. At the regional level, recent activities and research have focused on providing scientific advice to management bodies. For example, in support of established marine protected areas, the Commission for the Conservation of Antarctic Marine Living Resources supported such actions as the collation of data to characterize biodiversity and ecosystem processes, physical environmental features and human activities, the development of a vulnerable marine ecosystem taxa classification guide, data-quality monitoring and the development of trigger levels for vulnerable marine ecosystem taxa.[30]

23. For the protection of corals and sponges in the NAFO regulatory area, benthic survey missions have provided evidence enabling NAFO to close areas within its fishing footprint to protect sea pens, sponges and gorgonian corals (see para. 179 below). In 2009 and 2010, NAFO Potential Vulnerable Marine Ecosystem — Impacts of Deep-Sea Fisheries Programme multidisciplinary surveys were conducted to examine fishing resources and vulnerable marine ecosystems in the regulatory area.[31]

2. Marine technology

24. At its 2010 meeting, the Working Group recommended, inter alia, that the General Assembly recognize the need to make progress in the implementation of the provisions of the United Nations Convention on the Law of the Sea on the development and transfer of marine technology and, in that context, that States and competent international organizations apply and implement the Criteria and Guidelines on the Transfer of Marine Technology adopted by the Assembly of the Intergovernmental Oceanographic Commission of the UNESCO in 2003 (A/65/68, para. 10). The General Assembly subsequently endorsed that recommendation.[32]

25. Previous reports of the Secretary-General have provided information on technological issues, including on technologies which may be used to enhance the

[29] Additional information on the project is available at www.iucn.org/marine/seamounts.

[30] Contribution of the Commission for the Conservation of Antarctic Marine Living Resources.

[31] Contribution of the Northwest Atlantic Fisheries Organization (NAFO).

[32] Resolution 65/37 A, para. 162.

range and reach of information-gathering instrumentation.[33] The Census of Marine Life emphasized that in order to access the deep sea, the use of new technologies was of the utmost importance. It noted that the analysis of data was greatly enhanced by advances in digital processing, network databases and visualization. Geophysical and high resolution tools that can discriminate seabed type (mud, sand, rock) and allow the characterization of ecological features (coral mounds, outcropping methane hydrate, et cetera) were used to classify and map habitats over large areas. The Census highlighted, however, the need to continue developing new technologies to access the global oceans and deep sea, particularly with regard to improving the rates of exploration and discovery.[34]

26. Technological developments that have pushed the limits of the unknown and the unexplored have occurred recently. The Challenger Deep,[35] in the Mariana Trench was reached for the third time in 2009, by the *Nereus*.[36] In a wide variety of sectors,[37] interest has recently increased in deep sea submersibles, with China becoming the fifth State, alongside France, Japan, the Russian Federation and the United States of America, to achieve dives to a depth of 3,500 m.[38]

27. Similarly, the frontier with regard to deep extractions of hydrocarbons continues to be extended. While regular extraction is performed in water depths of 1,500 m to 2,000 m,[39] the Perdido platform in the Gulf of Mexico is moored in approximately 2,450 m of water. Setting new records in terms of depth of extraction, the platform facility also includes the Tobago subsea well, in approximately 2,925 m of water.[40] However, increasing resource extraction from the deep sea floor raises questions relating to security, including that of the underwater facilities, and to the safety of the personnel operating such facilities.[41]

28. The continuous development of marine renewable energy (see sect. II.H.3 below) has elicited concerns about the possible impact of electromagnetic fields created by tidal- and wave-powered generators and power cables on species that are known to use natural fields for guidance.[42]

B. Fishing activities and developments related to marine living resources

29. Fisheries and aquaculture play a vital role in the economy and sustainable development of many countries. FAO has reported that capture fisheries and aquaculture production in 2008 was approximately 142 million tons, of which

---

[33] See A/65/69/Add.2, paras. 161-164.

[34] See note 19 above.

[35] The Challenger Deep, which is located at the southern end of the Mariana Trench, is the deepest known point in the oceans, with a depth of 10,911 m.

[36] A/64/66/Add.1, para. 166.

[37] See www.xprize.org/prize-development/exploration#deep and www.theaustralian.com.au/news/world/james-cameron-commissions-deep-sea-sub-to-film-footage-for-avatar-sequel/story-e6frg6so-1225919474515.

[38] See news.xinhuanet.com/english2010/china/2010-08/27/c_13465142.htm.

[39] A/64/66/Add.1, para. 26.

[40] See www.shell.com/home/content/aboutshell/our_strategy/major_projects_2/perdido/overview.

[41] See www.upi.com/Science_News/Resource-Wars/2011/01/13/Brazil-mulls-underwater-base-to-guard-oil/UPI-92491294952853.

[42] See www.unep.org/NairobiConvention/Information_Center/News_Events_January2011.asp.

marine capture production was 79.5 million tons. Almost 81 per cent of world fish production was destined for human consumption and provided 3 billion people with at least 15 per cent of the animal protein in their diets. The share of fishery and aquaculture production entering international trade increased from 25 per cent in 1976 to 39 per cent in 2008, and world exports reached a record value of $102 billion.[43]

30. Fishing activities continue to have adverse impacts on marine biodiversity in areas within and beyond national jurisdiction owing, in particular, to overfishing, illegal, unreported and unregulated fishing, destructive fishing practices, by-catch and discards.[44] The proportion of marine fish stocks estimated to be underexploited or moderately exploited declined from 40 per cent in the mid-1970s to 15 per cent in 2008, whereas the proportion of overexploited, depleted or recovering stocks increased from 10 per cent in 1974 to 32 per cent in 2008. Of that 32 per cent, it was estimated that 28 per cent were overexploited, 3 per cent were depleted and 1 per cent were recovering from depletion.[45] Overexploitation has turned fisheries into an "underperforming natural asset".[46]

31. Particular concerns have been raised regarding the overexploitation of some straddling fish stocks, highly migratory fish stocks and other fisheries resources in the high seas.[47] Of the 23 tuna stocks monitored by FAO, up to 60 per cent are more or less fully exploited and up to 35 per cent are overexploited or depleted.[48]

32. A number of specific initiatives have been taken to address the impact of fisheries activities on the marine environment, as set out below.

1. Illegal, unreported and unregulated fishing

33. Illegal, unreported and unregulated fishing is a global problem which occurs in virtually all capture fisheries, including beyond areas of national jurisdiction. Attention has been drawn to the need for States to eliminate subsidies that contribute to illegal, unreported and unregulated fishing, adopt market-related measures to prevent illegally harvested fish or fish products from entering the commercial market, ensure compliance with conservation and management measures, share information and practices to strengthen enforcement and improve measures to monitor and regulate transhipment.[49] Further efforts are also needed in the preparation of national plans to combat illegal, unreported and unregulated fishing, as called for by the International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing. FAO has reported difficulties relating to the number of non-reporting fishing countries, which has increased, as well as a worsening of the quality of capture statistics.[50]

---

[43] The Food and Agriculture Organization of the United Nations (FAO), *The State of World Fisheries and Aquaculture 2010*.

[44] For a description of these and other impacts, see A/64/66/Add.2, para. 51; A/59/62/Add.1, paras. 295-300; A/59/298, paras. 72-98; A/60/63/Add.1, paras. 132-146; A/62/260, paras. 60-96; and A/62/66/Add.2, paras. 14-27.

[45] See note 43 above.

[46] See note 11 above.

[47] See A/CONF.210/2010/7.

[48] See note 43 above.

[49] See note 47 above.

[50] See note 43 above.

34. The FAO Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing, which was adopted in 2009, has been identified as a significant tool to combat illegal, unreported and unregulated fishing. In resolution 65/38, the General Assembly encouraged States to consider ratifying, accepting, approving or acceding to the instrument with a view to its early entry into force.[51] With regard to flag State performance, the Assembly has urged States and regional fisheries management organizations and arrangements to develop appropriate processes to assess the performance of States and has encouraged further work, including by FAO, on the development of guidelines on flag State control of fishing vessels.[52]

35. It is envisaged that the global record of fishing vessels, refrigerated transport vessels and supply vessels under development within FAO will be a global repository that will permit the reliable identification of vessels authorized to engage in fishing or fishing-related activity.[53] An FAO technical consultation on the development of the global record was held in November 2010.[54] At its twenty-ninth session, held from 31 January to 4 February 2011, the FAO Committee on Fisheries recognized that the global record should be developed as a voluntary initiative with a phased approach to implementation, and in a cost-effective manner, taking advantage of existing systems and technologies.[55]

36. Regional fisheries management organizations and arrangements continue to take measures to combat illegal, unreported and unregulated fishing, including through the use and exchange of illegal, unreported and unregulated vessels lists, 100 per cent observer coverage, vessel monitoring systems, vessel registries, port control measures and the prohibition of transhipment at sea.[56]

2. By-catch and adverse impacts on marine biodiversity

37. Despite emphasis given to by-catch and discards in the FAO international plans of action on seabirds and sharks[57] and the *Guidelines to Reduce Sea Turtle Mortality in Fishing Operations*,[58] problems persist with high levels of unwanted and often unreported by-catch and discards in many fisheries around the world. These catches often include the capture of ecologically important species and

---

[51] Resolution 65/38, para. 50. The Agreement will enter into force 30 days after the date of deposit of the twenty-fifth instrument of ratification, acceptance, approval or accession (article 29 of the Agreement).

[52] Resolution 65/38, paras. 44 and 58.

[53] See note 43 above.

[54] See the report on the technical consultation to identify a structure and strategy for the development and implementation of the global record of fishing vessels, refrigerated transport vessels and supply vessels, 8 to 12 November 2010, FAO Fisheries and Aquaculture Report No. 956 (FIRO/R956).

[55] FAO, draft report on the twenty-ninth session of the Committee on Fisheries.

[56] Contributions of the Inter-American Tropical Tuna Commission, the International Commission for the Conservation of Atlantic Tunas and the North-East Atlantic Fisheries Commission.

[57] The International Plan of Action for Reducing Incidental Catch of Seabirds in Longline Fisheries and the International Plan of Action for the Conservation and Management of Sharks, available from www.fao.org/docrep.

[58] Available at www.fao.org/docrep/012/i0725e/i0725e.pdf.

juveniles of economically valuable species. Global discards are currently estimated at approximately 7 million tons per year.[59]

38. At its sixty-fifth session, the General Assembly welcomed the convening by the FAO of the Technical Consultation to Develop International Guidelines on Bycatch Management and Reduction of Discards, held in December 2010.[60] The International Guidelines on Bycatch Management and Reduction of Discards[61] were endorsed by the FAO Committee on Fisheries at its twenty-ninth session,[62] and are intended to assist States and regional fisheries management organizations and arrangements in the management of by-catch and the reduction of discards, in conformity with the FAO Code of Conduct for Responsible Fisheries.

39. Regional fisheries management organizations and arrangements continue to take action to reduce by-catch and discards, including through time closures.[63] As part of its efforts to regulate the capture of juvenile tuna, the Inter-American Tropical Tuna Commission has begun work to regulate the use of fishing aggregating devices in the tuna fisheries, with a pilot programme in the East Pacific Ocean. The programme includes, inter alia, provisions for the marking of fishing aggregating devices, maintaining a record of the numbers of such devices on board each vessel, and recording the date, time and position of the deployment of each of them.[64] International Commission for the Conservation of Atlantic Tunas observer programmes are aimed at monitoring fisheries of tuna and tuna-like species and more carefully assess the impact of tuna fisheries on other marine resources, in particular sea turtles, seabirds and marine mammals (see sect. II.J.2 below).[65]

3. Adverse impacts of bottom fisheries

40. At its sixty-sixth session in 2011, the General Assembly will conduct a review of the actions taken by States and regional fisheries management organizations and arrangements in response to resolutions 61/105 and 64/72 to address the impacts of bottom fishing on vulnerable marine ecosystems with a view to ensuring effective implementation of the measures and to make further recommendations, where necessary. In order to assist the Assembly in its review, the Secretary-General is preparing a report on the actions taken by States and regional fisheries management organizations and arrangements[66] and will convene a two-day workshop, on 15 and 16 September 2011, to discuss implementation of those resolutions.

41. Significant among the actions taken by the international community has been the adoption, in 2008, of the FAO International Guidelines for the Management of

---

[59] See note 43 above.

[60] See resolution 65/38.

[61] See the report on the technical consultation to develop international guidelines on by-catch management and reduction of discards, Rome, 6 to 10 December 2010, FAO Fisheries and Aquaculture Report No. 957 (FIRO/R957).

[62] See note 55 above.

[63] Contributions of the Inter-American Tropical Tuna Commission and the International Commission for the Conservation of Atlantic Tunas.

[64] Contribution of the Inter-American Tropical Tuna Commission.

[65] Contribution of the International Commission for the Conservation of Atlantic Tunas.

[66] Australia, Norway, the Commission for the Conservation of Antarctic Marine Living Resources, NAFO and the North-East Atlantic Fisheries Commission indicated that they would submit information on specific actions taken to implement the relevant paragraphs of resolution 61/105 and 64/72 in the context of that report.

Deep-Sea Fisheries in the High Seas. FAO continues to support the implementation of the Guidelines through a series of activities, including technical guidance and review of best practices on topics such as impact assessments, vulnerable marine ecosystem encounter protocols and collaboration on data collection with the deep-sea fishing industry.[67] A global database of information relevant to vulnerable marine ecosystems is also being developed, and user-friendly species identification guides will be published to assist in improving information on deep-sea species.[68] In addition, FAO is developing a programme for areas beyond national jurisdiction with funding from GEF of $40 million to $50 million over a period of five years. The programme will focus on tuna fisheries and deep-sea fisheries and ecosystems.

C. Shipping activities

42. Shipping provides a vital engine for the global economy and plays a critical role in the sustainable development of both developed and developing countries.[69] Despite the recent crisis in economic growth and trade, and the resulting decline in international seaborne trade, the global shipping fleet continues to grow.[70]

43. Shipping is the least environmentally damaging form of commercial transport and is a comparatively minor contributor to marine pollution.[71] However, shipping activities impact the marine environment through, in particular, oil pollution, air pollution, greenhouse gas emissions, chemical pollution and the introduction of invasive alien species. These issues have been addressed by IMO, including in the context of the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto (MARPOL 73/78).[72]

1. Oil pollution and other discharges

44. The sixty-first session of the IMO Marine Environment Protection Committee, held in October 2010, approved updates to the IMO Manual on Oil Pollution in the light of the expected entry into force of amendments to MARPOL 73/78 annex I, on the prevention of pollution during transfer of oil between oil tankers at sea.[73] The manual is an important capacity-building tool for oil-spill prevention, contingency planning, preparedness and salvage, including in areas beyond national jurisdiction. Additional amendments will need to be made in order to harmonize the manual with the mandatory Polar Code, once finalized.[74] The Committee also adopted revised MARPOL 73/78 annex III regulations for the prevention of pollution by harmful substances carried by sea in packaged form,[75] which are expected to enter into force on 1 January 2014.

---

[67] See A/65/69/Add.2, paras. 175-177.

[68] Contribution of FAO.

[69] See A/64/66/Add.2, paras. 66 and 67, and A/65/69/Add.2, paras. 51-56.

[70] United Nations Conference on Trade and Development, *Review of Maritime Transport 2010*.

[71] See www.marisec.org/shippingfacts/home.

[72] See A/64/66/Add.2, paras. 68-77, and A/65/69/Add.2, paras. 243-259 and 379-381.

[73] Report of the Marine Environment Protection Committee on its sixty-first session (IMO document MEPC 61/24), paras. 8.5-8.11. See also resolution MEPC.186(59).

[74] Ibid., IMO document MEPC 61/24, para. 8.9. For progress on the development of a mandatory code for ships operating in polar waters, see the report to the Maritime Safety Committee (IMO document DE 54/23).

[75] Resolution MEPC.193(61).

45. With regard to the prevention of pollution by sewage, the Marine Environment Protection Committee approved draft amendments to MARPOL 73/78 annex IV to include the possibility of establishing special areas that ban the discharge of sewage from passenger ships.[76] The amendments will be considered for adoption at the forthcoming session of the Committee in July 2011. In addition, the Committee approved draft amendments to revise and update MARPOL 73/78 annex V regulations on the prevention of pollution by garbage from ships, with a view to adoption at its sixty-second session.[77] The amendments include a general prohibition on the discharge of garbage into the sea, except in accordance with regulations, and the addition of discharge requirements for animal carcasses.[78]

2. Air pollution

46. The release of air pollutants into the atmosphere can lead to the build-up of acidic compounds and the release of acid rain over long distances, which can impact marine biodiversity. At its sixty-first session, in October 2010, the Marine Environment Protection Committee adopted a new set of guidelines for monitoring the worldwide average sulphur content of residual fuel oils supplied for use on-board ships, in order to expand the monitoring programme to all petroleum fuel types covered by revised MARPOL 73/78 annex VI, on reduction in emissions of sulphur oxides, nitrogen oxides and particulate matter from ships.[79]

3. Greenhouse gas emissions

47. In previous reports, the Secretary-General reported on the second IMO greenhouse study, undertaken in 2009.[80] IMO is of the view that it should be entrusted with the development and enactment of global regulations on the control of greenhouse gas emissions from ships engaged in international trade, and has reported in this regard to the bodies of the United Nations Framework Convention on Climate Change.[81]

48. At its sixty-first session, the Marine Environment Protection Committee continued to discuss the reduction of greenhouse gas emissions from international shipping, including a proposal to amend MARPOL 73/78 annex VI to make mandatory for new ships the energy efficiency design index[82] and the ship energy efficiency management plan, which are currently voluntary.[83] Following a request by a number of States parties to MARPOL 73/78 annex VI, the proposed amendments will be considered at the sixty-second session of the Committee in July

---

[76] IMO document MEPC 61/24, paras. 7.25-7.36. See also report of the Marine Environment Protection Committee on its sixtieth session (IMO document MEPC 60/22), paras. 6.3-6.21.

[77] IMO document MEPC 61/24, para. 7.22.

[78] Ibid., annex 11. See also A/65/69/Add.2, para. 245.

[79] Resolution MEPC.192(61). See also A/64/66/Add.2, paras. 69 and 70.

[80] A/64/66/Add.2, para. 71.

[81] Note by IMO to the thirty-third session of the Subsidiary Body for Scientific and Technical Advice (see FCCC/SBSTA/2010/MISC.14) and note by IMO to the thirteenth session of the Ad Hoc Working Group on Long-term Cooperative Action under the Convention, available from http://unfccc.int.

[82] Interim guidelines on the method of calculation of the energy efficiency design index for new ships (IMO document MEPC.1/Circ.681).

[83] Guidance for the development of a ship energy efficiency management plan (IMO document MEPC.1/Circ.683).

2011.[84] The regulations would represent the first ever mandatory efficiency standard for an international transport sector.[85]

49. The Committee also discussed how to promote market-based measures. A wide range of measures were reviewed, including a proposed levy on carbon dioxide emissions from international shipping, or from ships not meeting energy efficiency requirements. The Committee agreed on terms of reference for an intersessional working group, which will report to the sixty-second session on the need for and purpose of market-based measures as a possible mechanism to reduce greenhouse gas emissions from international shipping, among other issues.[86]

4. Chemical pollution

50. The International Convention on the Control of Harmful Anti-fouling Systems on Ships, which entered into force in 2008, currently has 49 parties, representing approximately 75.29 per cent of the world's gross tonnage.[87] Such systems are used to prevent sea life, such as algae and molluscs, from attaching to the hull and thereby slowing the ship and increasing fuel consumption, but the chemicals used in the application of such systems can adversely impact marine biodiversity. At its sixty-first session, the Marine Environment Protection Committee adopted guidelines for the survey and certification of anti-fouling systems on ships,[88] which revise and revoke the 2002 guidelines,[89] and provide procedures for surveys to ensure compliance with the Convention.

D. Disposal of wastes

51. Previous reports of the Secretary-General have highlighted important decisions adopted in the framework of the 1972 Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (the London Convention) and its 1996 Protocol (the London Protocol) on matters of relevance to the conservation and sustainable use of marine biodiversity, including beyond areas of national jurisdiction (see sects. II.I.2 and II.I.3 below).[90]

52. The thirty-second Consultative Meeting of Contracting Parties to the London Convention and the fifth meeting of Contracting Parties to the London Protocol, held in October 2010, took note of the approval by the Marine Environment Protection Committee at its sixty-first session of proposed amendments to MARPOL 73/78 annex V[91] (see sect. C above) concerning the inclusion of animal carcasses as

---

[84] IMO document MEPC 61/24, para. 5.55.

[85] "Proposed GHG amendments to MARPOL convention circulated for adoption in 2011, as IMO heads to Cancún climate change conference", IMO press release, 25 November 2010, available from www.imo.org/mediacentre/pressbriefings.

[86] IMO document MEPC 61/24, paras. 5.67-5.87 and annex 7.

[87] See http://www.imo.org/About/Conventions/StatusOfConventions/Documents/Status%20-%202011.pdf.

[88] Resolution MEPC.195(61).

[89] See resolution MEPC.102(48) (revoked).

[90] See, for example, A/64/66/Add.2, para. 78, and A/65/69/Add.2, paras. 383 and 384.

[91] IMO document MEPC 61/24, para. 7.22 and annex 11.

a garbage type to be regulated, where the animals had been carried on board as live cargo.[92]

E. Land-based activities

53. Human activities on land are critical to the socio-economic development of countries. However, it has been estimated that as much as 80 per cent of marine pollution originates from land-based activities, from sources such as agriculture, industry and urban waste. Although the effects of this pollution are predominantly felt in coastal areas, pollution from land-based sources can also negatively impact biodiversity beyond areas of national jurisdiction.[93] For example, heavy metals such as mercury are dangerous pollutants which can enter the marine food chain and bioaccumulate.[94] High levels of mercury have been identified in highly migratory species of fish, such as tuna, as well as in different species of marine mammals.

54. The third session of the Intergovernmental Review Meeting on the Implementation of the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities is tentatively scheduled to be held in November 2011. The session will be aimed at strengthening and building strategic partnerships for coastal and marine protection and at reaching agreement on a series of five-year multilateral and multi-stakeholder action plans on mainstreaming the objectives of the Global Programme of Action at the national and subnational levels.[95]

55. The second of five planned sessions of the intergovernmental negotiating committee to prepare a global legally binding instrument on mercury was held in January 2011.[96]

56. At the regional level, efforts to address land-based sources of pollution were considered by the twelfth Global Meeting of the Regional Seas Conventions and Action Plans, held in September 2010.[97] The 1999 Protocol concerning Pollution from Land-based Sources and Activities to the 1983 Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region came into force on 11 July 2010. The Protocol provides a regional framework by setting forth general obligations, including establishing legally binding effluent limitations for domestic sewage, and developing plans for the reduction and control of agricultural non-point sources.[98]

---

[92] IMO document LC 32/15, paras. 8.1-8.7.

[93] See A/59/62/Add.1, para. 214, A/60/63/Add.1, paras. 154 and 155, A/62/66/Add.2, paras. 316 and 317, and A/64/66/Add.2, para. 79.

[94] UNEP, *Mercury: A Priority for Action* (2008).

[95] UNEP, Progress report on the implementation of decision SS.XI/7 on oceans (UNEP/GC.26/10).

[96] See www.unep.org/hazardoussubstances/MercuryNot/MercuryNegotiations/tabid/3320/language/en-US/Default.aspx.

[97] See www.unep.org/regionalseas/globalmeetings.

[98] See www.cep.unep.org/press/press-releases/caribbean-governments-gain-new-legal-weapon-in-combat-against-marine-pollution.

F. Mineral exploration and exploitation

57. Although the potential for seabed mineral mining operations is significant, mining activities in the deep sea are still largely prospective, as a number of factors, mainly of an economic and technological nature, affect the feasibility of deep-sea mining.[99] The main potentially exploitable sources of deep-sea minerals are found in polymetallic manganese nodules, polymetallic sulphides and cobalt-rich ferromanganese crusts.

58. The regulations on prospecting and exploration for polymetallic nodules in the Area[100] and the regulations on prospecting and exploration for polymetallic sulphides in the Area[101] provide for the application by the Authority and sponsoring States of the precautionary approach in the conduct of exploration in the Area, in order to ensure effective protection of the marine environment from harmful effects which may arise from activities in the Area. The sulphides regulations include provisions on the management of risks to biodiversity, including to vulnerable marine ecosystems.[102]

59. In November 2010, the secretariat of the Authority convened a workshop to further review the proposal and obtain the best possible scientific and policy advice on the formulation of an environmental management plan for the Clarion-Clipperton zone (see sects. II.J.2 and II.J.3 below). The proposal will be reviewed by the Legal and Technical Commission during the seventeenth session of the Authority in July 2011. While it is not yet known when exploitation will begin, the development of an environmental management plan reflects the need to be proactive in order to promote environmentally responsible seabed mining.[103]

G. Research on, and exploitation of, marine genetic resources

60. Previous reports of the Secretary-General have provided extensive information on the nature of marine genetic resources, features and organisms of interest in the search for marine genetic resources and the geography of the sampling effort. They have also addressed the scientific and commercial interests in marine genetic resources, technological issues, the valuation of the services provided by marine genetic resources, environmental aspects and legal issues.[104]

61. The results of the International Census of Marine Microbes, published in the context of the Census of Marine Life, have confirmed the importance to the biosphere and marine ecological processes of some of the smallest organisms.[105] the value of the ecosystem services provided by coral reefs is estimated at more than

---

[99] For information on economic aspects of deep seabed mining, see "Mining cobalt-rich ferromanganese crusts and polymetallic sulphide deposits: technical and economic considerations", proceedings of the International Seabed Authority workshop held from 31 July to 4 August 2006 in Kingston, available from www.isa.org.jm/en/scientific/workshops/2006; and United Nations/International Seabed Authority, *Marine Mineral Resources: Scientific Advances and Economic Perspectives* (ISBN: 976-610-712-2).

[100] Adopted on 13 July 2000 (ISBA/6/A/18).

[101] Adopted on 7 May 2010 (ISBA/16/A/12/Rev.1).

[102] Contribution of the Authority.

[103] Ibid.

[104] See A/60/63/Add.1, A/62/66 and Add.2 and A/64/66/Add.2.

[105] See note 19 above.

$5 million per square kilometre per year, in terms of revenues from genetic material and bioprospecting.[106] *The Economics of Ecosystems and Biodiversity* report provided information on the dependency of a number of sectors on genetic resources.[107] Yet the *Global Biodiversity Outlook* concluded that the 2010 target of promoting the conservation of genetic diversity had not been achieved globally and that, while the genetic diversity of wild species was more difficult to ascertain, the overall decline of biodiversity presented in the *Outlook* strongly suggested that genetic diversity was not being maintained.[108]

62. The importance of research on marine genetic resources for the purpose of enhancing the scientific understanding, potential use and application, and enhanced management of marine ecosystems continues to be recognized by the international community.[109] However, information on genetic diversity and the use of marine genetic resources, in particular those from areas beyond national jurisdiction, continues to be fragmentary.[110] In the context of the Census of Marine Life, the International Census of Marine Microbes drew attention to challenges in analysing an unprecedented volume of data from DNA sequencing. The computer algorithms and models required for more robust estimates of microbial diversity are still being developed, and the required computational power is still being sought. Greater attention must also be devoted to the improvement of taxonomy.

63. Issues related to genetic resources in areas beyond national jurisdiction continue to be the subject of joint work between UNESCO and the United Nations University, in particular with regard to their scientific, policy and legal aspects.[111] Recent work has focused on discerning the degree to which genetic resources from areas beyond national jurisdiction have contributed to commercial developments, such as patents applied for and granted. To date, it appears that a very small number of patents have originated from the seabed beyond national jurisdiction (generally related to deep-sea bacteria), while a greater number have been based on genetic resources from the high seas (primarily micro-organisms, floating sargassum weed, fish and krill). Of concern are applications with potentially large environmental consequences, such as the proposed use of sargassum weed for biofuels. The Institute of Advanced Studies of the United Nations University continuously updates the biological prospecting information resource tool (http://www.bioprospector.org/bioprospector/).[112]

64. In the context of its activities related to biotechnology and the bioeconomy, the Organization for Economic Cooperation and Development continues to gather and provide valuable information and data on the economic and socio-economic aspects of biotechnology by means of seminars, workshops and publications.[113]

---

[106] See note 5 above.

[107] See note 12 above. The report does not differentiate between terrestrial and marine genetic resources.

[108] See note 5 above.

[109] Resolution 65/37 A, paras. 168 and 169.

[110] See note 5 above.

[111] Contribution of UNESCO.

[112] Contribution of the Institute of Advanced Studies, UNU.

[113] See, for example, Organization for Economic Cooperation and Development, *The Bioeconomy to 2030: Designing A Policy Agenda* (2009). See also http://www.oecd.org/topic/0,3699,en_2649_37437_1_1_1_1_37437,00.html.

65. With respect to policy developments, pursuant to a recommendation by the Ad Hoc Open-ended Informal Working Group at its 2010 meeting (A/65/68, para. 19), the General Assembly, in paragraph 165 of its resolution 65/37 A, noted the discussion on the relevant legal regime on marine genetic resources in areas beyond national jurisdiction in accordance with the United Nations Convention on the Law of the Sea, and called upon States to further consider this issue in the context of the mandate of the Working Group, taking into account the views of States on Parts VII and XI of the Convention, with a view to making further progress on this issue.

66. Jamaica, in its contribution to the report, indicated that it did not have legislation on marine genetic resources in areas beyond its national jurisdiction but was reliant on the Convention for the protection of its interests.

67. At the meeting of the Working Group, a number of delegations underlined the need to address implementation gaps in relation to marine genetic resources beyond areas of national jurisdiction. Notably, delegations highlighted the following practical measures: the promotion of marine scientific research; the development of codes of conduct for research activities; environmental impact assessments, including the development of guidance on assessments of impacts on marine genetic resources within the general environmental impact assessment process; the establishment of mechanisms for cooperation and the sharing of information and knowledge resulting from research on marine genetic resources, including by increasing the participation of researchers from developing countries in relevant research projects; the establishment of marine protected areas; discussions on practical options for benefit-sharing, including options for facilitating access to samples; and consideration of the intellectual property aspects of marine genetic resources beyond areas of national jurisdiction (A/65/68, para. 73).

68. At its tenth meeting, in October 2010, the Conference of the Parties to the Convention on Biological Diversity adopted the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from Their Utilization to the Convention on Biological Diversity.[114] The objective of the Protocol is the fair and equitable sharing of the benefits arising from the utilization of genetic resources, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies, taking into account all rights over those resources and to technologies, and by appropriate funding, thereby contributing to the conservation of biological diversity and the sustainable use of its components (article 1). The Protocol applies to genetic resources within the scope of article 15 of the Convention, to traditional knowledge associated with genetic resources within the scope of the Convention, and to the benefits arising from the utilization of such resources and of such knowledge (article 3). Under the Protocol, parties are required to consider the need for, and modalities of, a global multilateral benefit-sharing mechanism to address the fair and equitable sharing of benefits derived from the utilization of genetic resources and traditional knowledge associated with genetic resources that occur in transboundary situations or for which it is not possible to grant or obtain prior informed consent. The benefits shared by users of genetic resources and traditional knowledge associated with genetic resources through this mechanism shall be used to support the conservation of biodiversity and the sustainable use of its components globally (article 10).

[114] Convention on Biological Diversity decision X/1 on access to genetic resources and the fair and equitable sharing of benefits arising from their utilization.

69. The FAO secretariat, in its contribution, indicated that, in response to General Assembly resolutions, a positive contribution might be expected from FAO, acting through the Commission on Genetic Resources for Food and Agriculture and the Committee on Fisheries, such as the development of elements for the Code of Conduct for Responsible Fisheries aimed at maintaining genetic diversity, including marine genetic resources, and fostering discussions on the equitable sharing of benefits.

70. The Third Intersessional Working Group established by the Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore of the World Intellectual Property Organization to address genetic resources[115] was held from 28 February to 4 March 2011. The meeting produced a draft text on objectives and principles, which will be submitted to the next session of the Intergovernmental Committee, to be held in May 2011. The document contains five main objectives on conditions for access to, and use of, genetic resources, the prevention of erroneous patents, information systems to enable patent offices to make proper decisions in granting patents, the relationship between intellectual property and other relevant international agreements and processes, and the role of the intellectual property system in relation to genetic resources.[116]

71. At the regional level, the thirty-third Antarctic Treaty Consultative Meeting, held in May 2010, continued to consider the issue of bioprospecting in the Antarctic region, based on several working and information papers, including a document presenting an overview of current research.[117] That review had concluded that bioprospecting research in the Antarctic region and/or involving Antarctic organisms was extensive and widespread.[118] Attention to bioprospecting in the Southern Ocean is reflected in a significant increase in the registration of patents associated with Antarctic marine life in recent years.[119]

H. Other activities, including new uses

72. As the number and the intensity of maritime uses have increased, concerns have been raised over new uses of the marine environment, including ocean fertilization, carbon sequestration, the development of renewable energy, the laying of submarine cables and pipelines, deep-sea tourism and aquaculture. While these activities and uses could generate economic and socio-economic benefits, they could also adversely impact marine biodiversity, including beyond areas of national jurisdiction. The extent to which some of these activities take place beyond areas of national jurisdiction is not clear.

---

[115] See A/65/69/Add.2, para. 217.

[116] See "Experts advance in technical discussions on IP and genetic resources", at http://www.wipo.int/tk/en/news/2011/news_0002.html.

[117] "Biological prospecting in the Antarctic region: a conservative overview of current research", Antarctic Treaty Consultative Meeting document WP002.

[118] Final Report of the thirty-third Antarctic Treaty Consultative Meeting, Punta del Este, Uruguay, 3 to 14 May 2010, available from www.ats.ag.

[119] Contribution to the Commission for the Conservation of Antarctic Marine Living Resources.

1. Ocean fertilization

73. A number of international statements, agreements and recommendations have been made in recent years concerning the potential impacts of ocean fertilization[120] on the marine environment.[121] In ocean fertilization, infertile waters are seeded with iron or other nutrients to enhance the growth of plankton and thereby increase the uptake of carbon dioxide by ocean waters.[122]

74. The General Assembly, in paragraph 150 of its resolution 65/37 A, noted the adoption by the thirty-second Consultative Meeting of Contracting Parties to the London Convention and the fifth Meeting of Contracting Parties to the London Protocol, held in October 2010, of a resolution on the assessment framework for scientific research involving ocean fertilization. The meeting decided that scientific research proposals should be assessed on a case-by-case basis using the assessment framework (see sect. II.J.2 below).[123]

75. The Contracting Parties further affirmed that the overall aim of their work was to provide a global, transparent and effective control and regulatory mechanism for ocean fertilization activities and other activities that fall within the scope of the London Convention and the London Protocol and have the potential to cause harm to the marine environment.[124]

76. The tenth meeting of the Conference of the Parties to the Convention on Biological Diversity requested parties to implement decision IX/16 C, in which the Conference of the Parties had requested, in accordance with the precautionary approach, that ocean fertilization activities not take place until there was an adequate scientific basis on which to justify them.[125]

2. Carbon sequestration

77. Carbon dioxide capture and sequestration is one of a portfolio of options to reduce levels of atmospheric carbon dioxide and mitigate the impact of climate change. Developments in technology have made it possible to capture carbon dioxide from industrial and energy-related sources, transport it and inject it into sub-seabed geological formations for long-term isolation from the atmosphere.[126]

78. In its resolution 65/37 A, the General Assembly took note of the amendment to the London Protocol adopted by the fourth Meeting of Contracting Parties to the

---

[120] For further information on ocean fertilization, see IOC, *A Scientific Summary for Policymakers on Ocean Fertilization* (2010). See also note by the Executive Secretary entitled "Scientific synthesis of the impacts of ocean fertilization on marine biodiversity" (UNEP/CBD/SBSTTA/14/INF/7).

[121] A/63/63/Add.1, paras. 278-283, and compilation of recent international statements, agreements and recommendations regarding ocean fertilization (IMO document LC 30/INF.4 and Add.1).

[122] Carbon Sequestration Leadership Forum, see www.cslforum.org.

[123] Contribution of IMO. See also IMO document LC 32/15, paras. 8.1-8.7 and annex 5, resolution LC-LP.2 (2010).

[124] See IMO document LC 32/15, paras. 8.1-8.7 and annex 5, resolution LC-LP.2 (2010).

[125] Convention on Biological Diversity decision X/29 on marine and coastal biological diversity. See also decision X/33 on biodiversity and climate change.

[126] Resolution LP.1 (1).

London Protocol, held in 2009, to allow the export of carbon dioxide streams for disposal into sub-seabed geological formations.[127]

79. The fifth meeting of Contracting Parties to the London Protocol adopted a workplan to conduct the review of the 2007 carbon dioxide Sequestration Guidelines in the light of the amendments to article 6 of the London Protocol,[128] and instructed the London Protocol Scientific Group to start with this review in 2011, with a view to completion in 2012.[129]

3. Renewable energy

80. As a response to climate change, many States have initiated programmes for energy production from renewable resources. The oceans, a relatively unexploited source of energy, can be used to produce renewable energy from, inter alia, waves and tidal force,[130] thereby contributing to sustainable development. If appropriately managed, such emerging oceanic activities could potentially benefit the marine environment and may even increase local biodiversity.[131] However, increased use of the oceans for energy production could also have potential negative impacts on biodiversity, such as habitat loss, collision risk, noise and electromagnetic fields.[132]

81. Although investments in the marine energy sector still remain small compared with investments in other renewable energy technologies, there are indicators that the sector is growing.[133] Furthermore, there is increasing interest in a wider range of possible technologies, including wave, tidal (barrages and turbines) and ocean thermal energy conversion systems.[134] Initial deployments of significant offshore installations, for example wind turbines, have been located principally within the

---

127 Resolution 65/37 A, para. 152.

128 See A/65/69/Add.2, paras. 384 and 385.

129 See note 92 above.

130 Global Energy Network Institute, *Ocean Energy Technologies for Renewable Energy Generation* (2009).

131 S. Leonhard and J. Pedersen, *Hard Bottom Substrate Monitoring*, Horns Rev Offshore Wind Farm, annual status report 2004; Kawasaki and others, "The relationship between habitat physical complexity and recruitment of the coral reef damselfish, *Pomacentrus amboinensis*: an experimental study using small-scale artificial reefs", Ichthyolological Research vol. 50, No. 1 (2003); J. Michel and others, *Worldwide Synthesis and Analysis of Existing Information Regarding Environmental Effects of Alternative Energy Uses on the Outer Continental Shelf*, United States Department of the Interior, Minerals Management Service, MMS OCS 2007-038 (2007); S. Leonhard, *Horns Rev Offshore Wind Farm: Environmental Impact Assessment of Sea Bottom and Marine Biology* (2000); R. Inger and others, "Marine renewable energy: potential benefits to biodiversity? An urgent call for research", Journal of Applied Ecology, vol. 46, No. 6 (2009); R. L. Sherman and others, "Artificial reef design: void space, complexity, and attractants", ICES Journal of Marine Science, vol. 59 (2002).

132 Secretariat of the Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Neighbouring Atlantic Area, "Guidelines to address the impact of anthropogenic noise on cetaceans in the ACCOBAMS area", available at http://www.accobams.org/images/stories/Guidelines/guidelines%20to%20address%20the%20impact%20of%20anthropogenic%20noise%20on%20cetaceans%20in%20the%20accobams%20area.pdf. See also, Sustainable Energy Authority of Ireland, "Offshore Renewable Energy Development Plan for Ireland, Strategic Environmental Assessment V(1): Non-Technical Summary" (2010).

133 See also UNEP, *Global Trends in Sustainable Energy Investment* (2010).

134 See REN21 "Renewables 2010: Global Status Report", at http://www.ren21.net/REN21Activities/Publications/GlobalStatusReport/tabid/5434/Default.aspx.

territorial sea.[135] The current technological and logistical barriers to deploying offshore installations in deep waters and at great distances from the coast indicate that such projects are currently not viable beyond areas of national jurisdiction.[136]

82. However, States are beginning to recognize the importance and benefits of renewable energy sources, as evidenced by the founding of the International Renewable Energy Agency,[137] whose statute entered into force in 2010. The mission of the Agency is to promote the widespread and increased adoption and sustainable use of renewable energy, taking into account, inter alia, the contribution of renewable energy to environmental preservation, through limiting pressure on natural resources and reducing deforestation and biodiversity loss. The statute also recognizes ocean energy, including tidal, wave and ocean thermal energy, as renewable sources of energy.

83. The United Nations Open-ended Informal Consultative Process on Oceans and the Law of the Sea will focus its discussion on marine renewable energies at its thirteenth meeting, to be held in 2012.[138]

4. Submarine cables

84. Gaps in the existing legal regime with regard to submarine cables have recently been highlighted.[139] A report on submarine cables prepared by the World Conservation Monitoring Centre of UNEP and the International Cable Protection Committee concluded that, in the deep ocean at depths of more than 1,000-1,500 m, evidence showed that the environmental impact of cables was neutral to minor and consisted of the one-time placement of the cables and infrequent, localized disturbances related to cable repairs. However, at shallower depths, disturbance was caused by the cable burial required.[140]

5. Tourism

85. It is generally acknowledged that the biggest danger facing most deep-sea vent ecosystems is physical damage caused by human activity. Because of the spectacular nature of these ecosystems, and their abundant their animal life, there is a growing interest in deep-sea hydrothermal vents for tourism. Visits to vents, if they are not controlled, could have a negative impact on vent animals and their habitats. Marine biodiversity beyond areas of national jurisdiction can also be affected by tourist cruise ships. Such ships generate an average of 4,400 kg of waste a day; by comparison, cargo ships produce 60 kg and fishing vessels 10 kg. In addition, the anti-fouling hull paints used by cruise ships are believed to be responsible for

---

[135] See RenewableUK, "Offshore Wind Worldwide", available at http://www.bwea.com/offshore/worldwide.html.

[136] S. Shaw and others, "Enabling offshore wind developments" European Wind Energy Association (2002).

[137] To date, 148 States and the European Union have signed the statute of the Agency. See http://www.irena.org/home/index.aspx?mnu=hom.

[138] Resolution 65/37 A, para. 231.

[139] See resolution 65/37 A. See also A/65/69, para. 71, and A/65/69/Add.2, para. 167.

[140] UNEP-World Conservation Monitoring Centre, *Submarine Cables and the Oceans: Connecting the World* (2009).

introducing harmful chemicals, including tributyltin, to pristine environments such as the Antarctic.[141]

86. Sustainable tourism development has been recognized as a means of achieving Millennium Development Goals, as it provides a host of employment opportunities. However, the potential negative impacts of tourism need to be carefully managed.

87. In a 2009 assessment report, the Arctic Council noted that the increased use of Arctic waters for tourism, shipping, research and resource development increased the risk of accidents and, therefore, the need to further strengthen search and rescue capabilities and capacity around the Arctic Ocean to ensure an appropriate response to any accident.[142] Tourism is also regulated in the Antarctic.[143] No area, however remote, is therefore free from tourism activities and there is a need to pay careful attention to tourism developments in such areas.

6. Aquaculture

88. Aquaculture is the fastest growing animal-food-producing sector and is poised to overtake capture fisheries as a source of food fish.[144] While progress has been made over the past decade, aquaculture governance remains an issue in many countries owing to, inter alia, conflicts over marine sites, disease outbreaks and inadequate development.[145] As the world's population expands and capture fish stocks decline, aquaculture may play an increasingly important role in feeding humanity, including by expanding further offshore.

89. Mariculture, considered to be a subset of aquaculture, is carried out in coastal waters in particular, with limited exposure to oceanic environment, but can have a significant impact on the sea bottom. Because some sites are overcrowded, increasing the risk of diseases, and sheltered inshore waters are often too shallow for finfish cage farming, there is a trend for farmers to move to more exposed areas, including in the open sea. Offshore mariculture refers to open-sea aquaculture, which takes place in waters exposed to the oceanic environment, including within the exclusive economic zone and beyond where the impact on the ocean bottom is thought to be minimal.[146]

90. However, concerns have been expressed over potential adverse impacts due to ecological, biological and chemical pollution.[147] As a result, the FAO Sub-Committee on Aquaculture has recommended, inter alia, that FAO clarify the technical and legal terminology related to offshore aquaculture, assess the impacts of offshore aquaculture and analyse geographical distribution.[148]

---

[141] See A/59/62/Add.1, paras. 235 and 236.

[142] Arctic Council, *Arctic Marine Shipping Assessment 2009*.

[143] See http://www.ats.aq/e/ats_other_tourism.htm.

[144] See note 43 above.

[145] "Moving aquaculture further offshore: governance issues and challenges" (FAO document COFI/AQ/V/2010/7).

[146] Ibid.

[147] Ibid.

[148] Decisions and recommendations of the Fifth Session of the Sub-Committee on Aquaculture, Phuket, Thailand, 27 September-1 October 2010 (FAO document COFI/2011/4).

I. Activities to address cross-cutting impacts

91. A number of problems facing the marine environment are cross-cutting in nature, being common to several activities at sea. These include the impacts of marine debris, invasive alien species, climate change and ocean noise, which have multiple sources and cumulative effects, with possible significant consequences to marine biodiversity beyond areas of national jurisdiction.

1. Marine debris

92. Marine debris is an obvious sign of the impact of human activities on the marine environment and has negative economic impacts on fishing, shipping and tourism. Marine debris includes persistent, manufactured or processed solid material discarded, disposed of or abandoned in the marine and coastal environment, such as plastics, glass, metal, styrofoam, rubber and lost or discarded fishing gear.[149]

93. The majority of marine debris with sea- or ocean-based sources comes from oceangoing ships, offshore oil and gas platforms, drilling rigs and aquaculture installations. Marine debris also has land-based sources.[150]

94. Plastic debris in the oceans, in particular, has been highlighted by UNEP as an emerging environmental issue. As a result of its slow rate of degradation in the marine environment, which has been estimated to be in the range of hundreds of years, plastic debris continues to accumulate, while breaking down into smaller particles and microplastics.[151] Moreover, concerns have been expressed regarding the potential impact of releases of persistent bioaccumulating and toxic compounds from such debris.

95. Several common types of plastic are buoyant and transported by ocean currents into remote marine areas, including the Arctic and the Antarctic. Recently, attention has been drawn to high levels of accumulation of plastics and other debris in high seas convergence zones, also known as "ocean gyres". Deep-water canyons also appear to be depositories for material from land-based sources.[152]

96. Concerns have also been expressed about abandoned, lost or otherwise discarded fishing gear, in particular its ability to continue to snare fish (often referred to as "ghost fishing"), with associated impacts on fish stocks, and potential impacts on endangered species and benthic environments, as well as its potential to become a navigational hazard at sea. FAO has outlined the impacts and causes of the problem, as well as possible preventive, mitigation and curative measures.[153]

97. The Fifth International Marine Debris Conference, sponsored by UNEP and the National Oceanic and Atmospheric Administration of the United States of America, held in March 2011, in Honolulu, Hawaii, discussed research advances and shared strategies and best practices to assess, reduce and prevent the impacts of marine debris. The Conference adopted the Honolulu Commitment, which, inter alia, establishes a cross-sectoral approach to help reduce the occurrence of marine

[149] UNEP, *The State of the Marine Environment: Trends and Processes* (2009).
[150] UNEP, *Marine Litter: A Global Challenge* (2009).
[151] UNEP Yearbook 2011.
[152] Ibid.
[153] See note 43 above.

debris and calls for the development of a global strategy for the prevention, reduction and management of marine debris.[154]

2. Invasive alien species

98. The introduction of invasive species, including through the exchange of ship ballast water, also remains a major concern.[155] For example in the Mediterranean, the failure to respond rapidly to the detection of Caulerpa taxifolia in 1984 enabled the marine algae to proliferate, with negative consequences for native phytobenthos species, as well as for tourism and other commercial and recreational activities.[156] The unintentional introduction of invasive alien species can be caused by activities such as aquaculture, ocean research, tourism and sport fishing.[157]

99. At its tenth meeting, the Conference of the Parties to the Convention on Biological Diversity requested the Executive Secretary to work with other relevant bodies in order to better understand the management of invasive alien species in the marine and coastal environment.[158]

100. With regard to ballast water, the 2004 International Convention for the Control and Management of Ships' Ballast Water and Sediments, which has not yet entered into force, contemplates ballast water management through ballast water exchange or approved ballast water management systems. Other methods of ballast water management may also be accepted, provided that such methods ensure at least the same level of protection for the environment, human health, property or resources, and are approved in principle by the Marine Environment Protection Committee of IMO.[159]

101. In order to expedite the process of evaluation of ballast water management systems, the Marine Environment Protection Committee adopted a framework for determining when it was appropriate to use the basic approval granted to one ballast water management system for another system using the same active substance or preparation.[160] The Committee also concurred with the conclusions of its ballast water review group that, for ships with a ballast water capacity of up to 5,000 m^3, including those constructed in 2011, there were sufficient technologies available to achieve the standard in the regulations of the Ballast Water Convention.[161] However, the Committee agreed that it would be necessary to undertake a new review of ballast water treatment technologies, focused on larger ships, at its sixty-second session.[162]

---

[154] See www.gpa.unep.org.

[155] J. Tamelander and others, *Guidelines for Development of a National Ballast Water Management Strategy* (2010).

[156] See note 12 above.

[157] See Convention on Biological Diversity decision X/38 on invasive alien species.

[158] Ibid.

[159] International Convention for the Control and Management of Ships' Ballast Water and Sediments, annex, regulation B-3 (7).

[160] IMO document MEPC 61/24. Report to the Maritime Safety Committee and the Marine Environment Protection Committee, IMO document BLG 14/17, annex 3.

[161] IMO document MEPC 61/24, para. 2.29.

[162] Ibid., para. 2.35.

3. Climate change

102. Climate change is expected to result in increases in sea surface temperature, a global sea-level rise and decreases in sea-ice cover, as well as changes in salinity, wave conditions and ocean circulation. These impacts are likely to amplify natural variations and exacerbate existing stresses on marine resources and ecosystems.[163] Particular concerns have been expressed over ocean acidification and its impacts, which could alter species composition, disrupt marine food webs and ecosystems and potentially damage fishing, tourism and other human activities connected to the seas.[164]

103. In the deep sea, alterations in sea temperatures could adversely affect the biological functioning of seamount organisms, and warmer waters could reduce the overall primary productivity within the oceans, leading to a decrease in the organic matter that falls to the seabed and supplies deep sea species with nutrients.[165] In the tropics, warmer air and water temperatures and rising sea levels could drive species from tropical habitats to subtropical regions.[166]

104. Actions to address the impacts of climate change on the oceans continue at all levels, including efforts to improve understanding of the nature of these impacts.[167] The tenth meeting of the Conference of the Parties to the Convention on Biological Diversity requested the Subsidiary Body on Scientific, Technical and Technological Advice to consider the impacts of ocean acidification on marine biodiversity and habitats as part of the programme of work on marine and coastal biological diversity.[168]

105. The new strategic plan adopted by the Conference of the Parties (see para. 170 below) set a target of 2015 for the anthropogenic pressures on coral reefs and other vulnerable ecosystems impacted by climate change or ocean acidification to be minimized, so as to maintain their integrity and functioning. By 2020, ecosystem resilience and the contribution of biodiversity to carbon stocks would be enhanced through conservation and restoration, including the restoration of at least 15 per cent of degraded ecosystems, thereby contributing to climate change mitigation and adaptation.[169]

106. The twenty-ninth session of the FAO Committee on Fisheries considered issues relating to climate change impacts, adaptation and mitigation in the context of fisheries and aquaculture.[170] The Committee recommended that FAO continue efforts to keep member States informed of the implications of climate change for fisheries and aquaculture, with an emphasis on the ecological and economic resilience of fisheries and aquaculture operations and the communities that depend

---

[163] FAO, "Fisheries and aquaculture in our changing climate: adaptation and mitigation measures in fisheries and aquaculture", FAO document COFI/2011/6.

[164] Contribution of the secretariat of the Convention on Biological Diversity. See also UNEP, *Emerging Issues: Environmental Consequences of Ocean Acidification: A Threat to Food Security* (2010).

[165] Contribution of the secretariat of the Convention on Biological Diversity.

[166] See note 43 above.

[167] See, for example, A/65/69/Add.2, paras. 373-392.

[168] Convention on Biological Diversity decision X/13 on new and emerging issues.

[169] Convention on Biological Diversity decision X/2 on the Strategic Plan for Biodiversity 2011-2020 and the Aichi Biodiversity Targets.

[170] See note 55 above.

on them. The Committee also encouraged the further development of the FAO road map for fisheries, aquaculture and climate change.[171]

4. Ocean noise

107. Human activities in the oceans are responsible for generating increasing levels of underwater noise, and there is growing concern regarding the potential threat to marine living resources posed by noise proliferation. Sources of anthropogenic ocean noise include commercial and non-commercial shipping, air guns used to carry out seismic surveys, military sonar, underwater detonations and construction, resource extraction and fishing activities. Offshore wind farms have also been identified as sources of noise, and other new technology to capture marine renewable energy may be additional sources (see sect. II.H.3 above).[172]

108. The General Assembly has consistently addressed ocean noise through its annual resolutions on oceans and the law of the sea.[173] In paragraph 186 of its resolution 65/37 A, the Assembly noted that ocean noise was a potential threat to living marine resources, affirmed the importance of sound scientific studies in addressing the matter, and encouraged further research, studies and consideration of the impacts of ocean noise on marine living resources. In resolution 65/38 on sustainable fisheries, the Assembly encouraged further studies, including by FAO, on the impacts of underwater noise on fish stocks and fishing catch rates, as well as associated socio-economic effects.[174]

109. As requested by the General Assembly, the Division for Ocean Affairs and the Law of the Sea has continued to compile peer-reviewed scientific studies received from Member States and intergovernmental organizations, and has made them available on its website.[175]

110. The tenth meeting of the Conference of the Parties to the Convention on Biological Diversity requested the Subsidiary Body on Scientific, Technical and Technological Advice to take into account, in the implementation of the programmes of work on protected areas and on marine and coastal biodiversity, the impact of ocean noise on marine protected areas.[176] It also requested the Executive Secretary, in collaboration with parties, other Governments, and relevant organizations, to compile and synthesize available scientific information on anthropogenic underwater noise and its impacts.[177]

111. The impacts of ocean noise on fisheries resources were discussed at the twenty-ninth session of the FAO Committee on Fisheries. Various sources of ocean noise can have an impact on commercially important fish stocks. For example, noise

---

[171] Ibid.

[172] Report of the sixteenth meeting of the Advisory Committee on the Agreement on the Conservation of Small Cetaceans of the Baltic and North Seas, para. 66. See also report of the Scientific Committee of the International Whaling Commission, document IWC/61/Rep 1, para. 12.5.2.

[173] See, for example, resolutions 60/30, para. 84, 61/222, para. 107, 62/215, para. 120, 63/111, para. 141, and 64/71, para. 162.

[174] Resolution 65/38, para. 127.

[175] See www.un.org/depts/los/general_assembly/noise/noise.htm for a comprehensive list of peer-reviewed scientific studies.

[176] Convention on Biological Diversity decision X/13 on new and emerging issues.

[177] Convention on Biological Diversity decision X/29 on marine and coastal biodiversity.

generated by seismic air guns has been shown to reduce catch rates by 40 to 80 per cent, severely affecting the distribution and local abundance of fish stocks. Some studies have noted that catch rates do not seem to return to normal even days after the noise has abated.[178]

112. At the regional level, the issue of anthropogenic noise and cetaceans was considered at the Fourth Meeting of the Parties to the Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Neighbouring Atlantic Area,[179] held in November 2010. The meeting strongly welcomed the report of its scientific committee on the impact of anthropogenic noise on cetaceans, as well as its associated guidelines. The guidelines include source-specific monitoring and mitigation measures aimed at reducing environmental impacts from high-power sonar, seismic surveys and air gun usage, coastal and offshore construction works, offshore platforms, playback sound exposure experiments and other sources of undersea noise. The secretariat of the Agreement is also developing a pilot project for the use of acoustic devices to limit interactions between cetaceans and seine fishing in the Mediterranean.[180]

113. The secretariats of the Convention on Migratory Species of Wild Animals, the Agreement on the Conservation of Small Cetaceans of the Baltic, North East Atlantic, Irish and North Seas and the Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR Convention) are currently investigating the development of a common set of guidelines for noise mitigation.[181]

J. Management tools

114. A number of management tools in use within areas of national jurisdiction can also be used to achieve the conservation and sustainable use of marine biodiversity beyond areas of national jurisdiction. The implementation of those tools in areas beyond national jurisdiction requires taking into account a number of specificities, including of a legal, governance and environmental nature. Efforts and case studies are ongoing to consider ways in which available management tools can successfully be applied beyond areas of national jurisdiction, as outlined below.

1. Integrated management and ecosystem approaches

115. Integrated management and ecosystem approaches are essential to mitigate the cumulative impacts of sectoral activities taking place beyond areas of national jurisdiction. At its sixty-fifth session, the General Assembly continued to encourage States to cooperate and coordinate their efforts and take, individually or jointly, all

[178] See note 55 above.

[179] The name of the Agreement was changed from "Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Area" to reflect the expanded geographical scope of the Agreement as agreed in resolution A/4.1 of the Meeting of the Parties.

[180] Report of the Fourth Meeting of the Contracting Parties to ACCOBAMS, annex X, resolution 4.17, and contribution of the Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Neighbouring Atlantic Area.

[181] See UNEP/CMS/ScC16/Inf.2.3, paras. 7-11; Sixth Meeting of the Parties to the Agreement on the Conservation of Small Cetaceans of the Baltic, North East Atlantic, Irish and North Seas, resolution No. 3, annex 1, para. 3; and OSPAR/BDC/10/2/2 Add.8.

measures, in conformity with international law, including the United Nations Convention on the Law of the Sea and other applicable instruments, to address impacts on marine ecosystems within and beyond areas of national jurisdiction, taking into account the integrity of the ecosystems concerned (resolution 65/37 A, para. 153). It also encouraged competent organizations and bodies that had not yet done so to incorporate an ecosystem approach into their mandates, in order to address impacts on marine ecosystems (resolution 65/37 A, para. 154).

116. At its last meeting, the Working Group recommended that States and competent international organizations work towards a more integrated and ecosystem-based approach to the conservation and sustainable use of marine biodiversity beyond areas of national jurisdiction, in order to strengthen cross-sectoral cooperation and effectively address sectoral and cumulative impacts (A/65/68, para. 13). This recommendation was subsequently endorsed by the General Assembly.[182]

117. The secretariat of the International Seabed Authority, in its contribution, noted that a challenge lay in adopting, implementing and keeping under review the rules, regulations and procedures of the Authority that embody an ecosystem-based management approach and an assessment of the impacts in order to manage risks to biodiversity. It also noted that the goals of the management plan for the Clarion-Clipperton Zone included the maintenance of regional biodiversity, ecosystem structure and ecosystem function, together with the application of the principles of integrated ecosystem-based management.

118. The IOC secretariat, in its contribution, drew attention to its Integrated Coastal Area Management initiative, established in 1998 to technically assist member States to implement ecosystem-based and integrated coastal area management. IOC is currently leading two marine components of the GEF medium-sized project to develop a transboundary waters assessment programme for large marine ecosystems and the open ocean. The open ocean programme will contribute to identifying threatening environmental issues in the open ocean and finding management solutions as well as translating science for policy. It is expected that the programme will also contribute to the Regular Process for global reporting and assessment of the state of the marine environment, including socio-economic aspects (the "Regular Process").[183]

119. Progress has been made in applying ecosystem approaches to fisheries management. FAO is furthering the ecosystem approach to fisheries globally as a comprehensive and all-encompassing approach to sustainable fisheries within an ecosystem context. A number of regional and interregional workshops were held in 2009-2010, and a comprehensive toolbox for ecosystem approach to fisheries implementation is foreseen to be completed in 2011. Activities related to the ecosystem approach to fisheries have been identified by the FAO Committee on Fisheries as a high priority throughout the biennium 2012-2013. The FAO secretariat stressed the importance of impact assessments within an ecosystem approach (see sect. II.J.2 below).[184]

---

[182] Resolution 65/37 A, para. 162.

[183] Contribution of IOC. See http://twap.iwlearn.org/inception-reports/gef-twap-update-for-september-2010.

[184] Contribution of FAO.

120. At the regional level, work is ongoing in the context of NAFO to prepare terms of reference to support the road map for developing an ecosystem approach to fisheries for NAFO.[185] The ecosystem and precautionary approaches to fishery management and principles for the effective conservation and management of fisheries resources have now been incorporated into the work of the Inter-American Tropical Tuna Commission and other regional fisheries management organizations and arrangements.[186]

121. In the Southern Ocean, the Commission for the Conservation of Antarctic Marine Living Resources supports working groups on ecosystem monitoring and management and on incidental mortality associated with fishing operations. Monitoring activities have been established to distinguish between changes associated with fishing activities as opposed to changes associated with environmental variability.[187]

122. The twelfth Global Meeting of Regional Seas Conventions and Action Plans identified ecosystem-based management as the most effective and least costly means of managing oceans and coasts.[188]

123. The quality status report published in 2010 for the North-East Atlantic shows that gaps in knowledge still need to be addressed, including overarching ecosystem assessments to support an ecosystem approach to the management of human activities. The 2010 ministerial meeting of the Commission for the Protection of the Marine Environment of the North-East Atlantic (OSPAR Commission), held in September 2010, endorsed a new North-East Atlantic environment strategy (2010-2020), which focuses on implementing an ecosystem approach and providing coordination for the implementation of the European Union Marine Strategy Framework Directive.[189]

124. An initiative launched in 2008 by the Coordinating Unit of the Mediterranean Action Plan aims to promote the application of an ecosystem approach to the management of human activities within the Barcelona Convention area.[190]

125. In the context of the large marine ecosystems programme, UNDP-GEF capacity-building projects in the Agulhas and Somali Current Large Marine Ecosystem and West Indian Ocean Seamounts made progress in transboundary diagnostic analyses and/or strategic action programmes, which represent multi-country commitments to legal, policy and institutional reforms to address transboundary environmental and marine resource concerns. Continued progress was made in filling ecosystem knowledge gaps through oceanographic assessments in the Agulhas and Somali Current Large Marine Ecosystem.[191]

---

[185] Contribution of NAFO.

[186] Contribution of the Inter-American Tropical Tuna Commission.

[187] Contribution of the Commission for the Conservation of Antarctic Marine Living Resources.

[188] "Marine and Coastal Ecosystem-Based Management: An Introductory Guide to Managing Oceans and Coasts Better", UNEP document UNEP (DEPI).RS.12/6.

[189] Contribution of UNEP.

[190] Ibid.

[191] For further information, see www.undp.org/gef/portfolio/iw.html.

2. Environmental impact assessments

126. The use of environmental impact assessments to support the conservation and sustainable use of marine biodiversity beyond areas of national jurisdiction is being increasingly supported. At its meeting in 2010, the Working Group recommended that the General Assembly recognize the importance of environmental impact assessments, in particular for the implementation of ecosystem and precautionary approaches, and recognize the importance of further developing scientific and technical guidance on the implementation of environmental impact assessments with respect to planned activities in areas beyond national jurisdiction, including consideration of the assessment of cumulative impacts (A/65/68, paras. 14 and 16). The General Assembly subsequently endorsed the recommendations of the Working Group.[192]

127. One of the aims of environmental impact assessments is to inform decision-making by identifying the potentially significant environmental effects and risks of development proposals. In the long term, environmental impact assessments promote sustainable development by ensuring that development proposals do not undermine critical resource and ecological functions.[193]

(a) Features of environmental impact assessments

128. A previous report of the Secretary-General provided information on the nature of environmental impact assessments and their relation to strategic environmental assessments.[194] The particular components of an environmental impact assessment process may vary under various instruments. However, most processes follow common steps: (a) screening to determine which projects or developments require a full or partial impact assessment; (b) scoping to identify which potential impacts are relevant to assess, and alternative solutions that avoid, mitigate or compensate adverse impacts; (c) assessment and evaluation of impacts and development of alternatives; (d) reporting, which takes the form of an environmental impact statement or report, including an environmental management plan; (e) review of the environmental impact assessments; (f) decision-making on whether to approve the project or not, and under what conditions; (g) monitoring to assess whether the predicted impacts and proposed mitigation measures occur as defined in the environmental management plan; and (h) compliance and enforcement as well as environmental auditing.[195]

129. The proponents of an activity or project carry out the environmental impact assessment, usually through an interdisciplinary team, which is appointed specifically to the task and has an appropriate range of scientific, economic and social expertise.[196] The process is overseen and the study reviewed by an external body, usually a governmental body.

---

[192] Resolution 65/37 A, para. 162.

[193] UNEP, Environmental Impact Assessment Training Resource Manual (2002).

[194] A/64/66/Add.2, para. 129.

[195] Report of the expert workshop on scientific and technical aspects relevant to environmental impact assessment in marine areas beyond national jurisdiction, Convention on Biological Diversity document UNEP/CBD/EW-EIAMA/2.

[196] See note 193 above.

130. Available studies have estimated that the cost of preparing an environmental impact assessment rarely exceeds 1 per cent of the project costs.[197] Costs in excess of 1 per cent seem to occur in relation to particularly controversial projects in sensitive environments, or where good practice has not been followed.[198] Additional costs, such as translation and travel costs, are expected for assessments in a transboundary context[199] and may also need to be taken into account for assessments undertaken beyond areas of national jurisdiction.

131. Some of the key features of good assessment practice are public participation, transparency and credibility.[200] Deficiencies of practice include technical shortcomings whereby the accuracy of impact predictions, the utility of mitigation and management measures and the relevance of reports for decision-making fall short of internationally accepted standards; procedural limitations, including inconsistencies in process administration, time delays, and lack of quality control; and structural issues, stemming from the application of environmental impact assessment as a separate process, unrelated to the project cycle or the larger context of decision-making. In order to be effective, environmental impact assessments thus require a coherent policy-planning framework and systematic follow-up procedures.[201] While environmental impact assessments are common on land or in near-shore and shallow waters, a number of ecological, practical, legal and governance aspects render their implementation more challenging beyond areas of national jurisdiction. Some of these aspects are outlined in the report of the expert workshop convened by the secretariat of the Convention on Biological Diversity in 2009.[202]

132. In addition, most environmental impact assessment processes are applied at a sectoral level and do not require the assessment of cumulative impacts across sectors. At the meeting of the Working Group in 2010, the view was expressed that strategic environmental assessments dealt more effectively with the assessment of cumulative impacts, as they involved the assessment of policies, programmes and plans, as opposed to individual activities (A/65/68, para. 53). The expert workshop of the Convention on Biological Diversity noted that strategic environmental assessments allowed the management of multiple uses of ocean space to be coordinated, including by being incorporated into regional or subregional integrated management plans.

(b) International instruments requiring environmental impact assessments

133. In addition to the United Nations Convention on the Law of the Sea (articles 204-206), a number of international instruments provide for environmental impact assessments. Some of them apply in areas beyond national jurisdiction and are outlined in a previous report of the Secretary-General (A/64/66/Add.2, paras. 130 and 131). Additional information is provided below.

134. The 1994 Agreement relating to the Implementation of Part XI of the Convention, the regulations on prospecting and exploration for polymetallic nodules

---

[197] Ibid., citing a World Bank report.
[198] European Commission, "EIA: a study on costs and benefits" (1996).
[199] Economic Commission for Europe, "Benefits and costs of transboundary EIA" (2007).
[200] See note 193 above.
[201] Ibid.
[202] See note 195 above.

in the Area and the regulations on prospecting and exploration for polymetallic sulphides in the Area require that applications for approval of plans of work be accompanied by an assessment of the potential environmental impacts of the proposed activities and by a description of a programme for oceanographic and baseline environmental studies.[203] In their annual reports to the International Seabed Authority, contractors must provide information on the implementation and results of their monitoring programmes and submit environmental baseline data. Recommendations for the guidance of contractors for the assessment of the possible environmental impacts arising from exploration for polymetallic nodules in the Area were issued in 2001 and revised in 2010.[204]

135. The Convention on International Trade of Endangered Species of Wild Fauna and Flora, which regulates four types of international trade (export, re-export, import and "introduction from the sea"[205]), requires a finding from the State of introduction that the introduction will not be detrimental to the survival of the species involved. This non-detriment finding must be made before a certificate of introduction from the sea is granted for a specimen of a species listed in appendix I or II of the Convention.[206] A scientific authority of the State of introduction must advise that such an introduction will not be detrimental to the survival of the species involved (article III, para. 5, and article IV, para. 6). With regard to species listed in appendix II, a scientific authority may prepare its advice in consultation with other national scientific authorities or, when appropriate, international scientific authorities (article IV, para. 7). The Standing Committee Working Group on Introduction from the Sea is currently developing a discussion document and revised resolution for consideration at the sixty-second session of the Standing Committee, to be held in 2012, and at the 16th meeting of the Conference of the Parties, to be held in 2013.[207]

136. IMO has developed assessment guidelines to protect marine areas from the potential impacts of international shipping. The guidelines for the assessment of wastes and other matter that may be considered for dumping at sea (annex 1 to the London Protocol)[208] include scoping and content provisions for an environmental impact assessment, based on annex 2 of the London Protocol. Annex 2 provides that applications to State party authorities for permits to dump wastes must be accompanied by an assessment of the sea disposal options, including information on waste characteristics, conditions at the proposed dump site, fluxes and proposed

---

[203] 1994 Agreement, annex, section 1, para. 7; regulation 18 of the nodules regulations, regulation 20 of the sulphides regulations.

[204] Authority documents ISBA/7/LTC/Rev.1 and ISBA/16/LTC/7.

[205] Article I, paragraph (e) of this Convention defines introduction from the sea as "transportation into a State of specimens of any species which were taken in the marine environment not under the jurisdiction of any State". The Conference of the Parties, through resolution Conf. 14.6 (Rev. CoP15), has agreed that "the marine environment not under the jurisdiction of any State" means those marine areas beyond the areas subject to the sovereignty or sovereign rights of a State consistent with international law, as reflected in the United Nations Convention on the Law of the Sea.

[206] Introduction from the sea has no application to species included in appendix III of the Convention (Article V).

[207] Contribution of the Convention on International Trade of Endangered Species of Wild Fauna and Flora.

[208] The guidelines are available at www.imo.org/OurWork/Environment/SpecialProgrammesAndInitiatives/Pages/London-Convention-and-Protocol.aspx.

disposal techniques and specify the potential effects on human health, living resources, amenities and other legitimate uses of the sea.[209]

137. In relation to ocean fertilization, resolution LC-LP.2 (2010) on the assessment framework for scientific research involving ocean fertilization, adopted by the Contracting Parties to the London Convention and the London Protocol (see sect. II.H.1 above), sets out criteria for the initial assessment of a proposal and detailed steps for completion of an environmental assessment, including risk management and monitoring. Every experiment, regardless of size or scale, is to be assessed in accordance with the framework. However, information requirements may vary according to the nature of each experiment.[210]

138. At the regional level, the Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Neighbouring Atlantic Area provides, in its annex 2, for impact assessments to be carried out in order to provide a basis for either allowing or prohibiting the continuation or the future development of activities that may affect cetaceans or their habitat in the Agreement area, including fisheries, offshore exploration and exploitation, nautical sports, tourism and cetacean-watching, as well as establishing the conditions under which such activities may be conducted.

(c) Information on environmental impact assessments undertaken or planned in areas beyond national jurisdiction

139. In accordance with the request contained in paragraph 167 of General Assembly resolution 65/37 A, the present section aims to provide information on environmental impact assessments undertaken with respect to planned activities in areas beyond national jurisdiction, including capacity-building aspects, on the basis of information requested from States and competent international organizations. Information on capacity-building needs is included in section III.B of the present report.

140. *General application of environmental impact assessments*. The European Union stated that information concerning assessments undertaken with respect to planned activities in areas beyond national jurisdiction, including capacity-building aspects, was still disperse and scarce. Some European Union States had reported that they did not carry out activities in areas beyond national jurisdiction, while in the case of those who may have carried out some activities in those areas there was no information on any environmental impact assessment undertaken, except where such assessments were compulsory under international agreements, rules of international organizations or European Union regulations.[211]

141. Namibia reported, in its contribution, that it had not carried out any assessments as envisaged in paragraph 167 of General Assembly resolution 65/37 A, but that it had strict environmental provisions, in line with international standards, which made it mandatory for an assessment to precede any major project that might adversely impact the environment.

142. Norway stated that it was committed to cooperating through relevant regional and international forums to conduct environmental impact assessments with respect

[209] Contribution of IMO.

[210] Ibid.

[211] Contribution of the European Union.

to planned activities in areas beyond national jurisdiction, where necessary, and to adopt the relevant management measures. It drew attention to the decisions and recommendations adopted by the ministerial meeting of the OSPAR Commission, held in September 2010, with respect to the establishment and management of six marine protected areas in areas beyond national jurisdiction in the North-East Atlantic (see para. 174 below), noting that those decisions had been based on environmental impact assessments conducted in the respective areas.[212] The recommendations provide that, where appropriate, a human activity in the marine protected areas, or any measure outside those areas, which may potentially conflict with the conservation objectives of the area, should be subjected to an environmental impact assessment or a strategic environmental assessment.

143. The Islamic Development Bank stated that the environmental impact of projects financed by the Bank was carefully reviewed during the preparatory phase of financing.[213]

144. *Fishing activities*. Australia reported that the primary activity undertaken by Australian nationals, vessels and corporations in areas beyond Australia's national jurisdiction was fishing, and environmental impact assessments were carried out in relation to fishing activities. Under Australia's Environment Protection and Biodiversity Conservation Act 1999, management arrangements applying to Australian vessels fishing on the high seas are subject to periodic environmental assessments. All Australian fisheries that encompass fishing activities in areas beyond national jurisdiction[214] have been subject to an assessment. Australia has also completed preliminary impact assessments, and is completing fuller impact assessments, in relation to bottom fishing activities by Australian flagged vessels in the South Pacific Regional Fisheries Management Organization (SPRFMO) area and the South Indian Ocean Fisheries Agreement area. Australian fishing vessels that operate on the high seas within the area of the Commission for the Conservation of Antarctic Marine Living Resources are also subject to the necessary assessments.

145. New Zealand, in its contribution, drew attention to a 2008 report on the impact assessment of proposed bottom fishing activities by New Zealand vessels fishing in the high seas in the SPRFMO area during 2008 and 2009.[215]

146. Norway noted that it was a member of several regional fisheries management organizations and arrangements,[216] some of which perform assessments of possible impacts from fishing activities in areas beyond national jurisdiction. Norway has also established national legislation with requirements for Norwegian fishers operating in areas governed by regional fisheries management organizations and arrangements, and it contributes to the regional assessments in the North Atlantic

---

[212] Contribution of Norway.

[213] Contribution of the Islamic Development Bank.

[214] These include the Eastern tuna and billfish, Western tuna and billfish, Western and Eastern skipjack tuna, Southern bluefin tuna and new and exploratory region of the fisheries in the Commission for the Conservation of Antarctic Marine Living Resources. Further information on the environmental assessment of Australian fisheries is available at www.environment.gov.au/coasts/fisheries.

[215] Available at: www.southpacificrfmo.org/assets/Science/Benthic-Impact-Assessments/New-Zealand/New-Zealand-Bottom-Fishery-Impact-Assessment-v1.3-2009-05-13.pdf.

[216] For example, the North-East Atlantic Fisheries Commission, NAFO and the Commission for the Conservation of Antarctic Marine Living Resources.

and the work of the International Council for Exploration of the Sea, which performs assessments of living marine resources.

147. Some of the States that contributed information to the report indicated that they would provide further information on their activities to assess the impacts of bottom fishing in the context of the report of the Secretary-General on the implementation of General Assembly resolutions 61/105 and 64/72.

148. The FAO secretariat stressed the importance of impact assessments within an ecosystem approach to fisheries and aquaculture. Such assessments are being completed by States and regional fisheries management organizations and arrangements in respect of deep-sea fisheries in the high seas as recommended in the FAO International Guidelines for the Management of Deep-sea Fisheries in the High Seas. The FAO secretariat will continue to support the implementation of the Guidelines (see para. 41 above).[217]

149. At the regional level, the environmental impacts of tuna and tuna-like fisheries have been taken into account by the International Commission for the Conservation of Atlantic Tunas, which has adopted recommendations and resolutions in relation to shark species, turtles, seabirds and sargassum.[218] The Commission secretariat reported that the objectives of the observer programmes[219] include the careful assessment of the impact of tuna fisheries on other marine resources. Efforts towards monitoring of sea turtles, seabirds and marine mammals are under way to obtain better data on the impacts of high sea fisheries on these species. Measures to mitigate the impacts of fishing and reduce the mortality of albatrosses and other seabirds have been adopted.[220] The Commission has also monitored the impact of tuna fisheries on several Atlantic pelagic shark species, including through the establishment of a species group on sharks which has, inter alia, conducted a risk assessment to assist the management of fisheries from an ecosystem perspective.[221]

150. NAFO adopted a map of existing fishing areas ("fishing footprint") in 2010, with areas outside being designated as new fishing areas. NAFO agreed to implement impact assessments for new exploratory fisheries that occur outside of its fishing footprint, if new scientific information becomes available on the existence of vulnerable marine ecosystems, or if significant changes occur in fishing conduct or technology. A working group of fishery managers and scientists on vulnerable marine ecosystems was established in 2008 to make recommendations to the Fisheries Commission on the effective implementation of measures to prevent significant adverse impacts on vulnerable marine ecosystems.[222]

151. The secretariat of the North-East Atlantic Fisheries Commission, in its contribution, reported that there had not been any reports of encounters with vulnerable marine ecosystems. Authorization to fish in "new" fishing areas had not yet been granted by any Contracting Party.

152. The secretariat of the Commission for the Conservation of Antarctic Marine Living Resources noted that the Commission continues to respond to the advice of

[217] Contribution of FAO.

[218] Available at www.iccat.int/enlRecsRegs.asp.

[219] See Commission recommendation 10-10.

[220] Commission recommendation 07-07.

[221] Contribution of the International Commission for the Conservation of Atlantic Tunas.

[222] Contribution of NAFO.

its Scientific Committee in relation to approaches to avoid significant adverse impacts of fishing operations on vulnerable marine ecosystems. Supported actions include the development of risk assessment frameworks, footprint mapping for existing fisheries, mitigation options, notification procedures and guidelines for gear impact assessments.[223]

153. *Prospecting for and exploration of mineral resources*. China, in its contribution, reported that investigation and evaluation of the marine environment had been undertaken in relation to the area covered by the contract signed between the China Ocean Mineral Resources Research and Development Association and the International Seabed Authority in 2001. China has provided reports annually and review reports every five years, containing accounts of the investigations and evaluations (see para. 17 above).

154. The secretariat of the Authority stated that environmental impact assessments had become one of the most effective and practical tools to support sustainable development. It noted that by providing a regional environmental baseline and a better understanding of the ecosystem structures and functions in the representative network of areas of particular environmental interest, the proposed environmental management plan for the Clarion-Clipperton Zone might assist contractors in fulfilling their obligations with respect to the evaluation of impact assessments of their activities and the establishment of preservation and impact reference zones. It drew attention to the fact that one of the operational objectives of the proposed environmental management plan was to undertake cumulative environmental impact assessments, as necessary, on the basis of future exploitation proposals.

155. *Other activities*. Australia stated that it was not aware of any activities by Australian nationals, vessels or corporations in areas beyond national jurisdiction, other than fishing activities, to which the requirements of article 206 of the Convention would apply. Accordingly, no environmental impact assessments of non-fishing activities in areas beyond national jurisdiction had been undertaken. However, Australia noted that its Environment Protection and Biodiversity Conservation Act 1999, which applied to Australian nationals, vessels and corporations in areas within and beyond Australia's national jurisdiction, provided a legal framework for environmental impact assessments.

156. Brazil, in its contribution, indicated that the first Brazilian Transatlantic Commission had been undertaken in 2009, enabling oceanographic scientific research in waters beyond areas of national jurisdiction in the South Atlantic. The objective of the Commission was to collect physical, chemical, biological and meteoro-oceanographic environmental data that would support environmental impact evaluations in the future.

157. The secretariat of the Convention on Biological Diversity drew attention to decision X/29 of the tenth meeting of the Conference of the Parties, which requested the Executive Secretary to facilitate the development of voluntary guidelines for the consideration of biodiversity in environmental impact assessments and strategic environmental assessments in marine and coastal areas using the guidance of the 2009 expert workshop (see paras. 131 and 132 above).[224] Pursuant to this request, the secretariat is preparing the draft voluntary guidelines, which will be submitted

[223] Contribution of the Commission for the Conservation of Antarctic Marine Living Resources.

[224] See note 195 above.

for consideration to the Subsidiary Body on Scientific, Technical and Technological Advice, prior to the eleventh meeting of the Conference of the Parties. The Conference of the Parties also requested the Executive Secretary to collaborate with a number of organizations, processes and scientific groups towards the organization of a joint expert meeting to review the extent to which biodiversity concerns, including the impacts on marine and coastal biodiversity of pelagic fisheries of lower trophic levels, are addressed in existing assessments and propose options to address biodiversity concerns.[225]

158. The IMO secretariat noted that while the guidelines for the assessment of wastes and other matter that may be considered for dumping at sea (see para. 136 above) apply in areas beyond national jurisdiction, in practice, most dumping licences are issued for disposal operations within the territorial sea or the exclusive economic zone of a coastal State. In relation to the assessment framework for scientific research involving ocean fertilization (see para. 137), the IMO secretariat noted that ocean fertilization experiments were primarily envisaged beyond areas of national jurisdiction where low-nutrient conditions prevail.[226]

159. At the regional level, in its resolution on guidelines to address the impact of anthropogenic noise on cetaceans in the area of the Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Neighbouring Atlantic Area (see para. 112 above), the fourth Meeting of the Parties to the Agreement encouraged parties to address fully the issue of anthropogenic noise in the marine environment, including cumulative effects, in the light of the best scientific information available and taking into consideration the applicable legislation of the parties, particularly as regards the need for thorough environmental impact assessments being undertaken before granting approval to proposed noise-producing activities. It also mandated the secretariat of the Agreement, in collaboration with the Scientific Committee, to establish a common working group with the secretariats of the Convention on Migratory Species, the Agreement on the Conservation of Small Cetaceans of the Baltic, North East Atlantic, Irish and North Seas and the Pelagos Agreement in order to develop appropriate tools to assess the impact of anthropogenic noise on cetaceans and to further elaborate measures to mitigate such impacts and to coordinate efforts with other international bodies, in particular the Coordination Unit for the Mediterranean Action Plan, the Commission on the Protection of the Black Sea Against Pollution, the OSPAR Commission secretariat and IMO.[227]

3. Area-based management tools, in particular marine protected areas

160. Area-based management, including the establishment of marine protected areas, has been recognized as an important tool for the conservation and sustainable use of marine biodiversity beyond areas of national jurisdiction (see A/65/68, para. 58). Previous reports of the Secretary-General provide extensive information on this subject.[228] The present section outlines recent developments.

---

[225] Decision X/29 on marine and coastal biodiversity.

[226] Contribution of IMO.

[227] Fourth Meeting of the Parties, resolution 4.17.

[228] See, in particular, A/62/66/Add.2, paras. 122-161, A/64/66/Add.2, paras. 134-149, and A/65/69/Add.2, paras. 290-308.

(a) Identification of ecologically or biologically significant marine areas in need of protection

161. At its 2010 meeting, the Working Group recommended that the General Assembly call upon States to work through competent international organizations towards the development of a common methodology for the identification and selection of marine areas that might benefit from protection based on existing criteria, with a view to facilitating achievement of the 2012 target on establishing marine protected areas in the Plan of Implementation of the World Summit on Sustainable Development (A/65/68, para. 18). The General Assembly subsequently endorsed this recommendation,[229] and further noted the work of States, relevant intergovernmental organizations and bodies, including the Convention on Biological Diversity, in the assessment of scientific information on, and compilation of ecological criteria for the identification of, marine areas that require protection (resolution 65/37 A, para. 178).

162. Work continues on the identification of ecologically or biologically significant marine areas in need of protection to support decision-making on the appropriate management measures, in particular in the context of the Convention on Biological Diversity. At its tenth meeting, the Conference of the Parties to the Convention on Biological Diversity noted that the application of the ecologically or biologically significant areas criteria[230] was a scientific and technical exercise, that areas found to meet the criteria might require enhanced conservation and management measures, and that that could be achieved through a variety of means, including marine protected areas and impact assessments. The Conference of the Parties emphasized that the identification of ecologically or biologically significant areas and the selection of conservation and management measures was a matter for States and competent intergovernmental organizations, in accordance with international law, including the United Nations Convention on the Law of the Sea. The meeting encouraged parties, other Governments and competent intergovernmental organizations to cooperate, collectively or on a regional or subregional basis, to identify and adopt appropriate measures for conservation and sustainable use in relation to ecologically or biologically significant areas, including by establishing representative networks of marine protected areas in accordance with international law, including the United Nations Convention on the Law of the Sea, and based on the best scientific information available, and to inform the relevant processes within the General Assembly. The meeting also requested the Executive Secretary of the Convention on Biological Diversity to facilitate availability and inter-operability of the best available marine and coastal biodiversity data sets and information across global, regional and national scales. The Executive Secretary was requested to organize a series of regional workshops to facilitate the description of ecologically or biologically significant marine areas through application of the scientific criteria as well as other relevant compatible and complementary nationally and intergovernmentally agreed scientific criteria, as well as the scientific guidance on the identification of marine areas beyond national jurisdiction.

163. The Conference of the Parties also requested the Executive Secretary, in collaboration with parties and other Governments, FAO, the Division, IOC and

[229] Resolution 65/37 A, para. 162.

[230] See ninth meeting of the Conference of the Parties, decision IX/20 on marine and coastal biodiversity, annex I.

others to establish a repository for scientific and technical information and experience related to the application of the scientific criteria on the identification of ecologically or biologically significant areas, and to develop an information-sharing mechanism with similar initiatives, such as the FAO work on vulnerable marine ecosystems. The Subsidiary Body on Scientific, Technical and Technological Advice was requested to prepare reports based on scientific and technical evaluation of information from the regional workshops, setting out details of areas meeting the scientific criteria, for consideration by the Conference of the Parties, which would then submit relevant information to the General Assembly, in particular the Working Group.[231]

164. The IOC secretariat noted that the Global Open Oceans and Deep Seabed Biogeographic Classification, together with the Convention on Biological Diversity criteria on ecologically or biologically significant areas, provided important scientific guidance for the identification of marine areas in need of protection. The IOC secretariat also reported that it was participating in the Global Ocean Biodiversity Initiative, an international partnership advancing the scientific basis for conserving biological diversity in the deep seas and open oceans with the aim of helping countries, as well as regional and global organizations, to use existing data and develop new data, tools and methodologies to identify ecologically or biologically significant areas, with an initial focus on areas beyond national jurisdiction. The Global Ocean Biodiversity Initiative has published reports, brochures and briefings providing a general overview of scientific tools, technologies and data sources that can inform the application of the Convention on Biological Diversity criteria.

165. In the context of shipping, the IMO secretariat drew attention to the particularly sensitive sea area concept and special areas, or emission control areas, under MARPOL 73/78, which contain strategic assessment processes in relation to an area. For example, in order to be designated as a particularly sensitive sea area, the area must have certain significant attributes (ecological, socio-economic or scientific), be vulnerable to damage by international shipping activities and have at least one associated protective measure with an identified legal basis that can be adopted by IMO to prevent, reduce or eliminate risks from these activities. Similarly, for an area to be designated as a special area, specific criteria relating to its oceanographical and ecological condition and to sea traffic must be satisfied.[232]

(b) Marine protected areas

166. At its 2010 meeting, the Working Group recommended that the General Assembly recognize the work of competent international organizations related to the use of area-based management tools and the importance of establishing marine protected areas consistent with international law and based on scientific information, including representative networks by 2012, as called for in the Plan of Implementation of the World Summit on Sustainable Development (A/65/68, para. 17). The General Assembly subsequently endorsed this recommendation.[233] It also reaffirmed the need for States to continue and intensify their efforts, directly

[231] Tenth meeting of the Conference of the Parties, decision X/29 on marine and coastal biodiversity.

[232] Contribution of IMO.

[233] Resolution 65/37 A, para. 162.

and through competent international organizations, to develop and facilitate the use of diverse approaches and tools for conserving and managing vulnerable marine ecosystems, including the possible establishment of marine protected areas, consistent with international law, as reflected in the Convention, and based on the best scientific information available, and the development of representative networks of any such areas by 2012 (resolution 65/37 A, para. 177).

167. Available information shows that there has been a significant increase in coverage of protected areas over the past decade. However, many ecological regions, particularly in marine ecosystems, remain underprotected, and the management effectiveness of protected areas remains variable. Of 232 marine eco-regions, 18 per cent meet the target for protected area coverage of at least 10 per cent, while half have less than 1 per cent protection.[234] The total number of marine protected areas now stands at approximately 5,880, covering over 4.7 million square kilometres, or 1.31 per cent of the world's ocean area. The total global marine protected area coverage is largely composed of a relatively small number of very large marine protected areas, almost all of which are within national jurisdiction.[235]

168. A recent report highlighted some of the costs and benefits of marine protected areas. While the costs of implementation, maintenance and adaptive management can be high, data on the costs of creation and management of marine protected areas and area networks remains limited. In 2002 estimates of the annual cost of running individual areas ranged from $9,000 to $6 million. In 2004 estimates put at $5 billion to $19 billion the cost of a global network that met 20 to 30 per cent of protection goals. Costs to livelihoods and impacts on users through loss of access and/or income were also mentioned. Among the benefits, the report outlined benefits for fisheries, tourism, spiritual, cultural, historical and aesthetic values, disaster mitigation, research, education and stewardship for ocean awareness and protection. Marine protected areas and area networks, as part of broader coastal and ocean management frameworks, are considered a key tool to help ecosystems remain healthy and perform ecological functions by protecting critical habitats. However, for marine protected areas to achieve their objectives, they need to be designed and managed effectively, taking into consideration the socio-economic needs of stakeholders. They also need to be part of an effective broader framework that addresses management across all sectors, and to act in synergy with other tools.[236]

169. In its contribution, Jamaica stated that it would like to see the creation of marine protected areas following the results of environmental impact assessment processes (see sect. II.J.2 above) related to fish stocks beyond its national jurisdiction.

170. At its tenth meeting, the Conference of the Parties to the Convention on Biological Diversity adopted a new strategic plan to achieve a significant reduction of biodiversity loss by 2020. Several of the 20 targets of the plan are relevant to marine biodiversity, including in areas beyond national jurisdiction. In particular, it was agreed that, by 2020, at least 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, would be

[234] See note 5 above.

[235] See www.iucn.org/about/work/programmes/marine/marine_our_work/marine_mpas/mpa_publications.cfm?7040/global-ocean-protection.

[236] Ibid. See also note 12 above.

conserved through effectively and equitably managed, ecologically representative and well-connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider seascapes.[237] Decision X/31 on protected areas, also adopted by the Conference of the Parties at its tenth meeting, encourages parties to establish marine protected areas for conservation and management of biodiversity as the main objective and, when in accordance with management objectives of protected areas, as fisheries management tools.

171. The Conference of the Parties noted with concern the slow progress towards achieving the 2012 target of establishment of marine protected areas, consistent with international law and based on the best scientific information available, including representative networks. The meeting invited the parties to make further efforts to improve the coverage, representativity and other network properties of the global system of marine and coastal protected areas, in particular identifying ways to accelerate progress in establishing ecologically representative and effectively managed marine and coastal protected areas under national jurisdiction or in areas subject to international regimes competent for the adoption of such measures. The Conference of the Parties also reiterated the key role of the Convention on Biological Diversity in supporting the work of the General Assembly with regard to marine protected areas beyond national jurisdiction, by focusing on providing scientific and, as appropriate, technical information and advice relating to marine biological diversity, the application of the ecosystem approach and the precautionary approach.[238]

172. The IOC secretariat, in its contribution, stated that a network of marine protected areas beyond areas of national jurisdiction or any other management action in such areas would require a monitoring system and a strong evidence base for policy-setting. Frequent and reliable observations are essential, as oceanographic features are dynamic. In that regard, fixed-boundary marine protected areas would not give the protection necessary to preserve pelagic biodiversity, and a solution being explored by IOC was therefore the use of dynamic marine protected area boundaries, following the example of electronic nautical charts. It also noted that the enforcement of marine protected areas beyond areas of national jurisdiction depended on the availability of vessel-tracking systems and remote sensing tools. IOC, with the Marine Board of the European Science Foundation, has established a working group to provide a framework to inform, engage and empower stakeholders in future marine protected area planning. The working group is reviewing and synthesizing the factors that should be considered for placing and establishing marine protected areas; reviewing criteria for the assessment of established areas; and developing a checklist of criteria for evaluating the efficacy and performance of an area. The working group is expected to deliver a peer-reviewed paper addressing these issues by the end of 2012.[239]

173. At the regional level, members of the Commission for the Conservation of Antarctic Marine Living Resources, individually and collectively, have made progress since 2009 with the further development of procedures for bio-regional planning in the Southern Ocean supporting the development of a representative

[237] Decision X/2 on the Strategic Plan for Biodiversity 2011-2020 and the Aichi Biodiversity Targets.

[238] Decision X/29 on marine and coastal biological diversity.

[239] Contribution of IOC.

system of marine protected areas, including in areas beyond national jurisdiction. In 2009, the Commission adopted a 94,000-square kilometre marine protected area on the South Orkney Islands southern shelf, in the first step towards the establishment of a representative system of marine protected areas within the Convention area by 2012. Activities towards this objective include the collation of data to characterize biodiversity patterns and ecosystem processes, physical environmental features and human activities for 11 priority regions and the convening of a workshop in 2011 to consider different approaches to the selection of candidate sites for further consideration by the Scientific Committee.[240]

174. In September 2010 and with effect from 12 April 2011, the parties to the Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR Convention) agreed to designate six high-seas marine protected areas: Milne Seamount Complex; Charlie Gibbs South; Altair Seamount High Seas; Antialtair Seamount High Seas; Josephine Seamount High Seas; and Mid-Atlantic Ridge North of the Azores High Seas.[241] When combined with the network of sites within national jurisdiction, these marine protected areas provide coverage of 3.1 per cent of the total OSPAR Convention area.[242] Some of those marine protected areas overlie the outer continental shelf of a coastal State. While the Charlie Gibbs South and Milne Seamount Complex areas aim at protecting and conserving the biodiversity and ecosystems of the seabed and superjacent waters, the other four areas were established to protect and conserve the biodiversity and ecosystems of the water superjacent to the sites, in coordination with, and complementary to, protective measures taken by Portugal for the seabed.[243] The recommendations on management accompanying the establishment of the marine protected areas address awareness-raising; information building; marine science, including the application of the Code of Conduct for Responsible Marine Research in the Deep Seas and High Seas of the OSPAR Maritime Area;[244] new developments, including the need for environmental impact assessments and strategic environmental assessments; and engagement with third parties. The decisions and recommendations recognize that a range of human activities, such as fisheries, shipping and exploration and exploitation of mineral resources, occurring, or potentially occurring, in the marine protected areas are regulated in the respective frameworks of other competent authorities.

175. In the context of the Barcelona Convention, the Regional Activity Centre for Specially Protected Areas is implementing a project supporting the establishment of specially protected areas of Mediterranean importance in open sea areas, including the deep seas, considering that the concerned areas are partly or wholly on the high seas.[245] Using a biogeographic approach, a list of 12 priority conservation areas lying in the open seas, including the deep sea, likely to contain sites that could be candidates for the list of specially protected areas was prepared.[246] A meeting of

[240] Contribution of the Commission for the Conservation of Antarctic Marine Living Resources.

[241] Decisions 2010/1 to 2010/6 and recommendations 2010/12 to 2010/17 of the Contracting Parties to the OSPAR Convention.

[242] Contribution of UNEP.

[243] Ibid.

[244] Agreement 2008-1.

[245] Contribution of UNEP.

[246] Report of the Extraordinary Meeting of the Focal Points for SPAs, UNEP document UNEP(DEPI)/MED WG.348/5.

legal and technical experts was held in March 2011 to review a proposed legal and institutional approach towards the establishment of specially protected areas in the high seas.

176. In November 2010, the Meeting of Parties to the Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Neighbouring Atlantic Area adopted resolution 4.15 on marine protected areas of importance for cetaceans conservation. It was recalled that parties should cooperate to create and maintain a network of specially protected areas to conserve cetaceans. The States concerned were urged to implement the development of high seas specially protected areas as part of a regional network, working in conjunction with the Regional Activity Centre. The Meeting of the Parties renewed its recommendation that parties give full consideration to and cooperate in the creation of marine protected areas for cetaceans in zones of special importance, within the framework of the relevant organizations, while inviting non-parties to take a similar action. In its resolution on guidelines to address the impact of anthropogenic noise on cetaceans in the Agreement area (see para. 112 above), the Meeting encouraged parties to integrate the issue of anthropogenic noise in management plans for marine protected areas.[247]

(c) Area-based management of the impacts of fishing

177. The General Assembly, in paragraph 123 of resolution 65/38, encouraged accelerated progress to establish criteria on the objectives and management of marine protected areas for fisheries purposes and, in that regard, welcomed the proposed work of FAO to develop technical guidelines, in accordance with the United Nations Convention on the Law of the Sea and the Code of Conduct for Responsible Fisheries, on the design, implementation and testing of marine protected areas for such purposes. It urged coordination and cooperation among all relevant international organizations and bodies in that regard.

178. The FAO secretariat reported that fisheries practices are often carried out in and around protected areas, and the fisheries sector often utilizes protected areas as management tools. It stated the importance of applying the right knowledge and practices in the management plans of protected areas, including enforcement, community participation, monitoring and the provision of alternative protein, where needed, so as to ensure the sustainable use of living and non-living resources. At its meeting in February 2011, the Committee on Fisheries considered specific activities relevant to biodiversity conservation, including establishing marine protected areas and networks of areas, and carrying out impact assessments.[248]

179. A number of regional fisheries management organizations have adopted area closures and other area-based measures to address the impacts of fishing. The International Commission for the Conservation of Atlantic Tunas adopted several time/area closures, mainly to protect juveniles of tuna species such as bluefin, swordfish and bigeye.[249] In 2010, 11 areas of higher sponge and coral concentrations were closed for two years in the NAFO area. The seamount closures were reviewed by NAFO in 2010 and will remain in effect until 31 December

[247] Resolution 4.17.

[248] See note 55 above.

[249] Contribution of the International Commission for the Conservation of Atlantic Tunas.

2014.[250] The North-East Atlantic Fisheries Commission adopted area closures to mitigate the impacts of bottom fisheries in the largest part of its regulatory area. This comprises closures in the Hatton and Rockall bank areas and areas on the Mid-Atlantic Ridge. The Commission secretariat noted that, in most instances, there was not enough research or data to identify vulnerable marine ecosystems in new fishing areas. While those areas were closed to normal commercial bottom fisheries, exploratory fishing might be authorized under strict conditions, including the requirement to carry an observer on board. In 2009, the General Fisheries Commission for the Mediterranean adopted recommendation 33/2009/1 on a fisheries restricted area in the Gulf of Lion.

(d) Area-based management of the impacts of shipping

180. The IMO secretariat drew attention to particularly sensitive sea areas and special areas (see para. 165 above) as tools that could be used beyond areas of national jurisdiction.[251] IHO reported that it was closely cooperating with IMO in better defining and making known to the mariners existing special areas and particularly sensitive sea areas. Once adopted by IMO, these areas are depicted on nautical charts by IHO and its member States' hydrographic offices, with the associated guidelines and restrictions to navigation in those areas.

(e) Area-based management of the impacts of mining

181. In the context of the International Seabed Authority's activities related to the protection and preservation of the marine environment in the Area, work has been ongoing to establish a representative network of areas of environmental interest throughout the Clarion-Clipperton Zone, an area covering approximately 4.5 million square kilometres. In November 2010, the Authority convened a workshop to review further the proposal to design an environmental management plan for the area. The proposed environmental management plan provides for the closure to mining activities of nine biogeographic areas of particular environmental interest. Those areas were chosen to represent a wide range of the habitat types present in the Clarion-Clipperton Zone, such as seamounts and fracture zone structures, while avoiding overlap with the current distribution of areas under a contract for exploration for polymetallic nodules and reserved areas. The proposal will be considered by the Legal and Technical Commission at the seventeenth session of the Authority in July 2011.[252]

(f) Other area-based management tools

182. *Biosphere reserves*. The UNESCO secretariat noted that some of the approaches in use in the context of UNESCO could inspire solutions for the governance of areas beyond national jurisdiction within the framework of an ecosystem approach. It highlighted experiences under the Man and the Biosphere Programme, based on the biosphere reserve approach, which entails a zoning

[250] Contribution of NAFO.

[251] For more information on particularly sensitive sea areas and special areas, see previous reports of the Secretary-General and www.imo.org/OurWork/Environment/PollutionPrevention/PSSAs/Pages/Default.aspx and www.imo.org/OurWork/Environment/PollutionPrevention/SpecialAreasUnderMARPOL/Pages/Default.aspx.

[252] Contribution of the Authority.

scheme composed of core areas devoted to conservation and research and monitoring; buffer zones devoted to research and monitoring; and transition areas devoted to human activities such as extractive activities and ecotourism. The identification and selection of these areas is based on the best available scientific information, the application of marine spatial planning and multi-stakeholder participatory processes, including the identification of, and responses to, capacity-building needs.

183. *Marine spatial planning*. Marine spatial planning is emerging as one of the most promising tools to implement ecosystem approaches. It does so by addressing at the same time multiple human uses, their cumulative impacts and interactive effects.[253] It is considered to be a process that can reduce conflicts among uses, facilitate compatible uses and preserve critical ecosystem services to meet economic, environmental, security and social objectives.[254]

184. Marine spatial planning, which has the same core principles as marine protected areas, helps to incorporate protected area networks and other conservation objectives within a broader spatial context.[255] The boundaries, total size of the planned area and size of planning units are key elements for the achievement of effective marine spatial planning. Marine spatial planning also needs to consider multiple management objectives and incorporate risk and environmental impact assessments.[256]

185. UNESCO has outlined 10 steps for marine spatial planning: defining need and establishing authority; obtaining financial support; organizing the process (pre-planning); organizing stakeholder participation; defining and analysing existing conditions; defining and analysing future conditions; developing and approving the spatial management plan; implementing and enforcing the spatial management plan; monitoring and evaluating performance; and adapting the marine spatial management process. Through its marine spatial planning initiative, UNESCO is synthesizing the information and lessons learned and providing guidance to managers. The purpose of this initiative is to help countries to operationalize ecosystem-based management.[257]

186. The integrated coastal area management initiative of IOC envisages marine spatial planning as one of its main outcomes. The IOC approach to marine spatial planning has focused on developing a step-by-step approach for implementation; documenting marine spatial planning initiatives around the world; analysing good practices; collecting references and literature; increasing understanding through publications; and capacity-building and training.[258]

K. Governance

187. The United Nations Convention on the Law of the Sea is recognized as the legal framework for all activities in the oceans and seas, including the conservation

[253] See note 9 above.

[254] Final recommendations of the United States Interagency Ocean Policy Task Force, 19 July 2010, available at www.whitehouse.gov/files/documents/OPTF_FinalRecs.pdf.

[255] See note 9 above.

[256] Ibid.

[257] See www.unesco-ioc-marinesp.be/.

[258] Contribution of IOC.

and sustainable use of marine biodiversity beyond areas of national jurisdiction. Numerous regional and international efforts are under way in various sectors to improve governance and enhance implementation of existing instruments for the conservation and sustainable use of marine biodiversity beyond areas of national jurisdiction.[259]

188. One measure of the state of ocean-related governance is found in the number of parties to the international treaties dealing with the marine environment, including the Convention, the Part XI Agreement and the United Nations Fish Stocks Agreement. The General Assembly has frequently called upon States to become parties to the international instruments dealing with governance of the oceans and seas.[260] As of 1 March 2010, there were 161 parties to the Convention, 140 to the Part XI Agreement and 78 to the United Nations Fish Stocks Agreement. UNEP has reported that the number of parties to 14 of the major multilateral environmental agreements, some of which are relevant to the marine environment, has continued to increase.[261]

189. Another measure of governance is the level of implementation of existing instruments. At the 2010 meeting of the Working Group, it was generally recognized that gaps in the implementation of the international legal and policy framework remained, in spite of some progress achieved in recent years (A/65/68, para. 42). Areas requiring particular attention were highlighted (para. 43). Divergent views continue to be held on whether an implementing agreement to UNCLOS is necessary to address implementation gaps (para. 45). Divergent views are also held regarding possible gaps in the institutional framework (para. 44).

190. As highlighted in discussions at the meeting of the Working Group, sectors play a key role in oceans governance (A/65/68, para. 46). However, increased cross-sectoral cooperation and coordination (see sect. III.H below) would assist in improving governance for the conservation and sustainable use of marine biodiversity beyond areas of national jurisdiction and developing integrated responses and management approaches.

191. In its contribution, the secretariat of the International Seabed Authority expressed the view that there was no institution with an overall mandate for the governance of the ocean space and that, consequently, the only way to ensure an integrated approach, and comprehensive protection of the marine environment, was close cooperation and coordination between international organizations with mandates over activities in the oceans.

192. Current UNEP activities relevant to governance in areas beyond national jurisdiction include ecosystem assessment and valuation, tools and resources for ecosystem-based management, capacity-building and awareness-raising. Planned activities include scientific advice and synthesis of good practices related to policy and governance, and working closely, under the auspices of UN-Oceans, with the Division, FAO, IOC and others to support policy-setting dialogue.[262]

---

[259] Contribution of UNDP.

[260] For example, see resolution 65/37 A, paras. 3, 4, 72, 77, 80, 98, 105, 115, 131, 133, 140 and 158, and resolution 65/38, paras. 5, 20, 36, 50, 91 and 92.

[261] See note 151 above.

[262] Contribution of UNEP. Also see A/64/66/Add.2, paras. 150-171.

193. In collaboration with IUCN, the UNEP Mediterranean Action Plan has initiated a project to promote governance in the Mediterranean Sea. Workshops have been organized to, inter alia, inventory governance issues of the Mediterranean and search for adequate mechanisms to address current challenges in order to provide support to national and intergovernmental decisions and policies in the Mediterranean.[263]

194. UNDP reported that a governance workshop, with the aim of generating policy recommendations for the improved governance of marine resources beyond areas of national jurisdiction in the Southern Indian Ocean, will be held by mid-2011. The workshop will be informed by technical papers on anthropogenic threats in the region and legal gap analysis.[264]

195. With regard to fisheries, addressing the increasing trend in the percentage of overexploited, depleted or recovering stocks will require improved fisheries governance and enhanced cooperation between existing and developing regional fisheries bodies. In this regard, the role of regional fisheries management organizations and arrangements in international fisheries governance is growing steadily, but strengthening their performance remains a major challenge.[265] Following the adoption of the Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing, the ground has been laid for the adoption of a new instrument on flag State performance. Furthermore, FAO has begun preparatory work for the establishment of a global record of fishing vessels as a tool against illegal, unreported and unregulated fishing.[266]

196. Despite the existence of a number of international conventions, the problem of plastic and other marine debris in the oceans persists (see sect. II.I.1 above).[267] This points to a gap in the implementation and enforcement of existing regulations and standards. A number of countries have taken steps to address this problem with the adoption of national legislation and regulations. Publicity resulting from media reports and from the activities of several non-governmental organizations has helped to raise public and political awareness of the problem, together with the larger issue of marine litter.[268]

L. Capacity-building and transfer of technology

197. The General Assembly continues to acknowledge the importance of capacity-building and transfer of technology to assist developing States, in particular the least developed countries and small island developing States, as well as coastal African States, in the protection of the marine environment and the conservation and sustainable use of marine resources (resolution 65/37 A, para. 23).

198. At its 2010 meeting, the Working Group recommended that capacity-building and the transfer of technology, including South-South technical cooperation, should be promoted, facilitated and strengthened (A/65/68, para. 7). In that regard, it

[263] Contribution of UNEP.
[264] Contribution of UNDP.
[265] Ibid.
[266] Contribution of FAO.
[267] See note 151 above.
[268] Ibid.

recommended that States and competent organizations cooperate in developing programmes and workshops for the sharing of skills relating to scientific and technical aspects of the conservation and sustainable use of marine biological diversity beyond areas of national jurisdiction, as well as training opportunities (para. 8). It further recommended that relevant organizations collect and disseminate information on available capacity-building opportunities and on the needs expressed by developing countries, and consider how cooperation and coordination could be enhanced in this area (para. 9). The General Assembly subsequently endorsed these recommendations.[269]

199. An important consideration raised in the discussion was the need to match available assistance with capacity needs (A/65/68, para. 41). In that regard, the General Assembly has noted with satisfaction the efforts of the Division to compile information on capacity-building initiatives (resolution 65/37 A, para. 26).

200. In the contributions to the present report, the following needs were also mentioned: information assistance for developing countries, especially African countries, in the consideration of the relevant legal regime on marine genetic resources in areas beyond national jurisdiction;[270] support in developing capacity to assess and monitor the impact of environmental activities in areas beyond national jurisdiction;[271] and assistance in improving technical knowledge in the areas of remote collection systems in deep oceans, instrument calibration and development of databases.[272]

201. The GEF National Capacity Self-Assessments also provide information on capacity-building needs expressed by States. Out of 119 participating States, more than 100 identified biodiversity conservation as a priority environmental concern, while 32 highlighted integrated ecosystem management. More than 95 countries specified the following cross-cutting capacities as a priority: (a) capacity to incorporate convention obligations into national legislation, policy and institutions; (b) capacity to develop economic instruments and sustainable financing mechanisms; (c) strengthening of institutional/organizational mandates, structures and frameworks; (d) development and enforcement of policy, legal and regulatory frameworks; (e) information collection, management and exchange; and (f) public awareness-raising and environmental education.[273]

202. Examples of recent initiatives for capacity-building and technology transfer are outlined below.

203. The International Seabed Authority continues to promote and encourage the conduct of marine scientific research in the Area, including research for biodiversity-inclusive environmental impact assessments of offshore projects through the Technical Assistance Programme-Marine Scientific Research and other projects.[274] To date, a total of $254,312 has been disbursed by the Endowment Fund through six awards for activities that promote capacity-building. In particular, the

[269] Resolution 65/37 A, para. 162.

[270] Contribution of the Economic Commission for Africa.

[271] Contribution of Namibia.

[272] Contribution of Brazil.

[273] UNDP, "National Capacity Self-Assessments: Results and Lessons Learned for Global Environmental Sustainability" (2010).

[274] See ISBA/16/A/2, paras. 31-44.

awards are encouraged to be used for international cruise participation and international laboratory use.[275]

204. The need for increased efforts in building capacity of developing countries to implement marine spatial planning as a tool for ecosystem-based management was noted by the IOC/UNESCO secretariat.

205. The secretariat of the Convention on International Trade in Endangered Species of Wild Fauna and Flora has undertaken capacity-building activities to strengthen the ability of parties to the Convention to make non-detriment findings (see para. 135 above). Notification to the Parties No. 2011/004 of 6 January 2011 seeks input from parties on draft guidance material for the making of non-detriment findings and the organization of related workshops.[276] The secretariat of the Convention also continues to provide assistance to parties, including scientific, technical and legal advice, electronic training materials and courses, CD-ROMs, country missions and national and regional workshops.[277]

206. With a view to enabling coastal States to establish hydrographic capabilities and thereby support better safety at sea and environmental protection, IHO stated in its contribution that it was ready to provide assistance, in particular to developing States and small island States.

207. At the regional level, NAFO has recently published coral and sponge guides that will aid in the identification of species that are commonly found in fishing trawls. These guides are practical keys for use by fishers, technicians and other non-experts at sea for identifying corals and sponges.[278]

208. Prompted by recommendations arising from a 2008 review of the performance of the Commission for the Conservation of Antarctic Marine Living Resources, its Scientific Committee has developed a three-year programme to support capacity-building. The secretariat of the Commission also supports training and capacity-building initiatives in respect of monitoring, control and surveillance, with a focus on combating illegal, unreported and unregulated fishing.[279]

209. The last meeting of the Inter-American Tropical Tuna Commission agreed to create a special fund to promote capacity-building. The Antigua Convention requires the Commission to adopt measures relating to technical assistance, technology transfer, training and other forms of cooperation to assist developing countries that are members of the Commission to fulfil their obligations, as well as to enhance their ability, inter alia, to participate in high seas fisheries on a sustainable basis.[280]

210. The Division administers two fellowships, that provide capacity-building opportunities for developing States, namely the Shirley Amerasinghe Fellowship and the United Nations-Nippon Foundation of Japan Fellowship Programme.[281] These fellowships offer customized research programmes in the field of ocean

[275] Ibid., paras. 36 and 37.

[276] The notification is available at www.cites.org.

[277] Contribution of the Convention on International Trade in Endangered Species of Wild Fauna and Flora.

[278] The guides are available at www.nafo.int.

[279] Contribution of the Commission for the Conservation of Antarctic Marine Living Resources.

[280] Contribution of the Inter-American Tropical Tuna Commission.

[281] See www.un.org/Depts/los/technical_assistance/hsa_fellowship/amerasinghe_fellowship.htm and www.un.org/Depts/los/nippon/index.

affairs and the law of the sea and related disciplines, including marine science in support of management frameworks.

III. Possible options and approaches to promote international cooperation and coordination

211. The conservation and sustainable use of marine biodiversity, including beyond areas of national jurisdiction, is a cross-cutting issue regulated and managed by numerous, and often overlapping, legal frameworks, organizations and bodies, at the national, regional and global levels. Cooperation among these organizations and bodies, at all levels, as well as across sectors and regimes with varying competencies beyond areas of national jurisdiction, is at the basis of a coordinated approach to the management of activities aimed at the conservation and sustainable use of such biodiversity. At the 2010 meeting of the Working Group, several delegations underlined the need for international cooperation in assessing and controlling anthropogenic impacts on marine biodiversity beyond areas of national jurisdiction, including through technical and financial support (A/65/68, para. 51).

212. A number of options and approaches to improve cooperation and coordination with respect to the conservation and sustainable use of marine biodiversity beyond areas of national jurisdiction have been discussed in various international forums, and several studies have been developed on these issues. The present section outlines initiatives, options and approaches to facilitate and promote international cooperation and coordination.

A. Information base

213. Better understanding and quantitative measurement of biodiversity and ecosystem values to support integrated policy assessments are essential to improved governance.[282] A wealth of information and scientific data is being gathered through various research projects (see sect. II.A.1 above). Documenting and sharing lessons learned and facilitating information exchange on biodiversity, its uses and management measures is critical to furthering our understanding and capacity to inform decision-making and improved management. Capacity development initiatives and the development of standardized databases would support this purpose.

214. At the 2010 meeting of the Working Group, various measures were proposed to improve cooperation and coordination to strengthen the information base. In this regard, a view was expressed that the Regular Process, when operational, would provide an integrated knowledge base to be used by sectoral bodies in planning and management (A/65/68, para. 49). The Regular Process would help to address the current fragmented information from different and unevenly distributed assessments and to enhance informed decision-making (para. 36).

215. At the international and regional level, States and organizations are taking steps to create and strengthen the information base.

---

[282] See note 12 above.

216. Of particular note is the Census of Marine Life (see paras. 18 and 19 above), which included more than 2,600 scientists from more than 80 States, specializing in diverse geographic environments or subject areas such as oceanography, ecology, statistics and marine biology.[283] The Census of Marine Life prompted the establishment of various databases on topics such as the biodiversity of seamounts,[284] the diversity of abyssal marine life[285] and the biogeography, ecology and vulnerability of chemosynthetic ecosystems in the deep sea.[286] Globally, the development of databases and other repositories of data is increasing.

217. The intergovernmental science policy platform on biodiversity and ecosystem services, currently under development, is expected to strengthen the science-policy interface for biodiversity and ecosystem services for the conservation and sustainable use of biodiversity, including marine biodiversity, by performing regular and timely assessments, providing key scientific information to policymakers and catalyzing financing for capacity-building activities.[287]

218. With regard to fishery resources, the Fishery Resources Monitoring Systems Partnership continued to enrich its database with contribution made by regional fisheries bodies.[288]

219. At the regional level, the OSPAR Commission has fostered international cooperation and dissemination of information and expertise to support capacity-building and exchange of best practices, including through collaboration with other competent authorities.[289]

220. The North-East Atlantic Fisheries Commission has sought cooperation with other international governmental organizations with competence to regulate human activities in the oceans other than fisheries. A memorandum of understanding with the OSPAR Commission was signed in 2008. The memorandum of understanding has facilitated free flow of information between the two Commissions, spatial planning and cooperation to enhance knowledge and understanding of the abundance and distribution of fish and other marine species. An agreement of cooperation was also signed in 2009 with IMO. The Commission is seeking similar arrangements with the International Seabed Authority. Furthermore, as chair of the regional fishery bodies secretariat network, the Commission aims to make the network an efficient vehicle for exchanging information and experiences between regional fishery bodies globally.[290]

221. Members of the Commission for the Conservation of Antarctic Marine Living Resources, collectively and individually, share information relating to Antarctic marine ecosystems through a variety of means, such as the Census of Antarctic Marine Life, the Southern Ocean Observing System and the Marine Biodiversity Information Network of the Scientific Committee for Antarctic Research. Several

[283] See www.coml.org. See also A/62/169, para. 101.

[284] See the "Global Census of Marine Life on Seamounts" project at http://censeam.niwa.co.nz/.

[285] See the "Census of the Diversity of Abyssal Marine Life" project at www.cedamar.org/.

[286] See the "Biogeography of Deep-Water Chemosynthetic Ecosystems" project at www.coml.org/projects/biography-deep-water-chemosynthetic-ecosystems-chess.

[287] See "Intergovernmental science-policy platform on biodiversity and ecosystem services: report of the Executive Director", UNEP document UNEP/GC.26/6. See also http://ipbes.net/.

[288] Contribution of FAO.

[289] Contribution of UNEP.

[290] Contribution of the North-East Atlantic Fisheries Commission.

non-governmental organizations also take an active interest in collecting and disseminating information relating to ecological processes in the Antarctic.

B. Capacity-building and technology transfer

222. At the eleventh meeting of the Informal Consultative Process, the focus of which was capacity-building, including in marine science, it was observed that despite efforts in building the capacity of developing States in ocean affairs and the law of the sea, such capacity had not improved substantially. The general view was expressed that one of the overarching challenges was the lack of coordination among capacity-building providers, which could counteract the effects of capacity-building programmes. In that regard, delegations stressed the need to coordinate capacity-building, in particular within the United Nations system, in order to ensure a targeted approach and prevent fragmentation or duplication of efforts (A/65/169, paras. 51 and 52).

223. The specific need to increase capacity-building and technology transfer for developing countries, including small island developing States, has been highlighted by the Working Group. Among others, it identified the promotion of South-South technical cooperation as an option to be further promoted for capacity-building and transfer of technology (A/65/68, para. 7). It is also important to match the needs of developing States with the available assistance, while ensuring that programmes are systematically reviewed.

224. The information outlined in this report and in previous reports of the Secretary-General[291] shows that a number of cooperative programmes, including training activities, are ongoing to facilitate and develop the capacity of developing countries. States are increasingly invited to identify specific needs for the purpose of matching them with capacity-building initiatives and, as necessary and appropriate, tailoring existing programmes to those needs.

225. The General Assembly, at its sixty-fifth session, recognized with appreciation the funding set aside by GEF for projects relating to oceans and marine biodiversity.[292]

226. Some organizations have coordinated capacity-building with other organizations as well as exchanging information on best practices. In order to strengthen relevant institutions, including regional fisheries management organizations and arrangements, for good fisheries governance, FAO has identified well-trained staff, adequate financial resources and assistance and capacity-building as areas of focus.[293] Special attention should also be dedicated to increasing the capacity of all stakeholders to fulfil their management responsibilities.[294]

227. International cooperation and dissemination of information and expertise to support capacity-building and exchange of best practices, including through collaboration with other competent authorities, such as the North-East Atlantic

[291] A/64/66/Add.2, paras. 172-182; A/65/69, paras. 33-76; A/65/164, paras. 32-48; and A/65/69/Add.2, para. 36.

[292] Resolution 65/37 A, para. 34.

[293] "Priorities and results under the medium-term plan and programme of work and budget", FAO document COFI/2011/9.

[294] See note 9 above.

Fisheries Commission, IMO, the International Seabed Authority and the International Atomic Energy Agency, was promoted in the context of the OSPAR Convention.[295]

C. Implementation

228. The need to improve the implementation of existing instruments and modern management approaches relating to the conservation and sustainable use of marine biodiversity beyond areas of national jurisdiction has been emphasized in numerous forums and in previous reports of the Secretary-General.[296] In this regard, the General Assembly has reiterated the essential need for cooperation, including through capacity-building and transfer of marine technology, to ensure that all States are able to implement the United Nations Convention on the Law of the Sea and benefit from the sustainable development of the oceans and seas, as well as participate fully in global and regional forums and processes dealing with oceans and law of the sea issues.[297] It has also emphasized the importance of State participation in existing instruments and increased efforts in the effective implementation of such instruments, including through effective flag State control, port State control, market-related measures and monitoring, control and surveillance, as well as modern approaches, such as the precautionary and ecosystem approaches.[298]

229. In 2010, the Working Group recommended that States apply relevant approaches for the conservation and sustainable use of marine biological diversity beyond areas of national jurisdiction, effectively implement relevant global and regional instruments to which they are parties, and consider becoming party to relevant instruments to which they are not yet party (A/65/68, para. 11). It also recommended that States and competent international organizations facilitate and enhance cooperation and coordination, including through participation in regional seas conventions and regional fisheries management organizations and arrangements, the exchange of information on best practices and the establishment of joint or coordinated programmes of work and activities (A/65/68, para. 12). These recommendations were endorsed by the General Assembly.[299]

230. In the context of fisheries, the resumed Review Conference on the United Nations Fish Stocks Agreement held in 2010 proposed additional means of strengthening the substance and methods of implementation of the provisions of the Agreement in order to better address any continuing problems in the conservation and management of straddling and highly migratory fish stocks. The Conference emphasized that full implementation of, and compliance with, conservation and management measures that were adopted in accordance with international law and applied the precautionary approach and were based on the best available scientific evidence, was essential to ensure recovery and long-term conservation and sustainable use of straddling fish stocks and highly migratory fish stocks.[300] The

[295] Contribution of UNEP.

[296] See A/65/68, paras. 11, 12 and 42-45; and A/64/66/Add.2, paras. 212-217.

[297] Resolution 65/37 A, preamble.

[298] See, for example, resolution 65/37 A, paras. 3, 4, 80, 131, 133, 140 and 177; and resolution 65/38, paras. 7, 12, 14, 35, 51, 57 and 111.

[299] Resolution 65/37 A, para. 162.

[300] A/CONF.210/2010/7, annex, para. 5.

General Assembly encouraged States and regional and subregional fisheries management organizations and arrangements to consider implementing the recommendations of the resumed Review Conference.[301]

231. A number of activities to enhance international cooperation and coordination, and thereby improve implementation in relation to the conservation and sustainable use of marine biodiversity beyond areas of national jurisdiction, have been detailed in the current report.[302] The General Assembly has noted with appreciation the efforts at the regional level to further the implementation of the Convention and respond, including through capacity-building, to issues related, inter alia, to the conservation and sustainable use of living marine resources, the protection and preservation of the marine environment and the conservation and sustainable use of marine biodiversity.[303]

232. It is clear, however, that further efforts are necessary. One of the challenges faced by the secretariat of the International Seabed Authority consists of implementing and keeping under review the rules, regulations and procedures of the Authority to manage risks to biodiversity (see sect. II.G above).[304]

233. The UNESCO secretariat pointed out that existing principles, best available scientific information and some of the experiences for the management of areas within national jurisdiction, both in the marine as well as terrestrial environment, can offer approaches and operational tools to implement coordinated actions beyond areas of national jurisdiction.[305]

234. In the context of fisheries, challenges to improved implementation of responsible fisheries include financial and human resource constraints and inadequacies in institutional and legal frameworks. Other common difficulties include high levels of biological and ecological uncertainty about the status of resources and the likely consequences of management action; poorly or loosely defined objectives for fisheries management leading to reactive rather than proactive management; frequent absence of effective or appropriate systems of user or access rights; absence of or inadequate participation by fishers and other stakeholders in management; insufficient capacity in national and regional fisheries management authorities; and widespread illegal, unreported and unregulated fishing resulting from inadequate monitoring, control and surveillance systems.[306]

D. Integrated management and ecosystem approaches

235. As noted in previous reports of the Secretary-General, cooperation and coordination towards integrated approaches and ecosystem approaches is fundamental to respond to the current fragmentation of management regimes.[307] The General Assembly has consistently reaffirmed the need to improve cooperation and

[301] Resolution 65/38, para. 32.
[302] Also see A/65/68, para. 42.
[303] Resolution 65/37 A, para. 219.
[304] Contribution of the Authority.
[305] Contribution of UNESCO.
[306] "FAO's role for improved integration of fisheries and aquaculture development and management, biodiversity conservation and environmental protection", FAO document COFI/2011/7.
[307] See A/64/66/Add.2, para. 218 and A/65/69/Add.2, para. 223.

coordination at the national, regional and global levels to support better implementation of the Convention and integrated management of the oceans.[308]

236. At the 2010 meeting of the Working Group, a number of proposals were made with a view to furthering cooperation and coordination towards the development of integrated management approaches and ecosystem approaches, building on existing mechanisms or developing new ones (A/65/68, paras. 46-50).

237. The secretariat of the International Seabed Authority underlined the need for close cooperation and coordination between international organizations with mandates over various activities in the oceans to ensure an integrated approach and comprehensive protection of the marine environment. In that regard, it drew attention to its close cooperation with other organizations having a mandate over the protection of the marine environment beyond areas of national jurisdiction, including the OSPAR Commission, the International Cable Protection Committee and the secretariat of the Convention on Biological Diversity.[309]

238. It has also been suggested that a regional marine spatial planning (see paras. 183-186 above) initiative could provide a framework to advance ocean management at a large ecosystem scale, addressing cumulative impacts from multiple uses and promoting integration between ecological, economic and social needs beyond areas of national jurisdiction.[310]

239. The establishment of a network of managers to exchange information on ecosystem-based management practice was also identified as a way to ensure that ecosystem-based management becomes more effective and easier to implement.[311]

E. Environmental impact assessments

240. At the 2010 meeting of the Working Group, a view was expressed in support of a need to harmonize requirements for environmental impact assessments in international instruments (A/65/68, para. 51). Several delegations proposed elaborating a global methodology for carrying out environmental impact assessments at the regional level, taking into consideration sectoral activities (A/65/68, para. 55). The adoption of a resolution by the General Assembly on the implementation of environmental impact assessments, incorporating a process similar to the one established in resolution 61/105 on the assessment of bottom fishing activities, was also proposed. Another view was expressed that the approach outlined in resolution 61/105 should not be applied to all activities beyond areas of national jurisdiction regardless of the nature of the activity or sector. The need to permit scientific or exploratory activities that did not cause significant adverse impact was also emphasized (A/65/68, para. 56).

241. The work undertaken in the context of the Convention on Biological Diversity and FAO (see sect. II.J.2 above), among others, may assist in gaining a better understanding of the various aspects and challenges of environmental impact processes as applied beyond areas of national jurisdiction and ways to address them.

---

[308] Resolution 65/37 A, preamble.
[309] Contribution of the Authority.
[310] See note 9 above.
[311] See note 188 above.

242. Owing to the limited information available regarding environmental impact assessments beyond areas of national jurisdiction, including on capacity-building needs, the implementation of the mechanism foreseen in articles 206 and 205 of the Convention, and the modalities of such implementation, merit further attention. These mechanisms require States to disseminate reports on the assessment of potential effects of planned activities under their jurisdiction or control which may cause substantial pollution of or significant and harmful changes to the marine environment through the competent international organizations.

243. In addition to information on the results of the assessments, a mechanism could be considered to share, through the competent international organizations, experiences in carrying out such assessments, lessons learned and best practices, including information on capacity-building needs.

244. Other approaches to facilitating an interdisciplinary and cross-sectoral review of the environmental impact assessment reports include the appointment of cross-sectoral advisory boards or scientific committees.[312]

F. Area-based management tools

245. One of the key requirements for progress in identifying and managing areas in need of protection is a single corpus of scientific advice.[313] At its meeting in 2010, the Working Group recommended that the General Assembly call upon States to work through competent international organizations towards the development of a common methodology for the identification and selection of marine areas that may benefit from protection based on existing criteria (A/65/68, para. 18). The General Assembly endorsed that recommendation.[314]

246. The secretariat of the International Seabed Authority, in its contribution, highlighted the fact that the scientific criteria on the basis of which the proposal related to the environmental management plan in the Clarion-Clipperton Zone was made (see paras. 58 and 154 above) were similar to the Convention on Biological Diversity criteria (see paras. 162 and 163 above) and those set out in the FAO International Guidelines (see para. 41 above), such convergence ensuring a consistent approach. This illustrated the benefits from close cooperation among international organizations with various mandates but similar challenges to address.

247. Other approaches put forward in other contexts to achieve coordination in scientific advice underpinning area-based management include: regional workshops to bring key stakeholders into the identification process at an early stage; commissioning a scientific institution or body to conduct the initial analysis for later review by States at a workshop or other joint meeting; and establishing a joint scientific working group with participants from relevant regional fisheries management organizations and arrangements, regional seas organizations and other experts.[315]

---

312 "Modalities for advancing cross-sectoral cooperation in managing marine areas beyond national jurisdiction: draft for discussion", UNEP document UNEP (DEPI)/RS.12/8.

313 Ibid.

314 Resolution 65/37 A, para. 162.

315 See note 313 above.

248. While progress has been made with enhanced consultation and involvement of stakeholders, it has been suggested that further efforts could be made in sharing best practices and lessons learned on engaging stakeholders. In addition, changes in ecosystems beyond national jurisdiction are likely to impact associated and neighbouring ecosystems directly or indirectly. There is therefore a need to engage neighbouring and adjacent coastal States in order to ensure an ecosystem approach.[316]

249. Cooperative mechanisms have been established between a number of organizations in relation to the establishment and implementation of area-based management tools as shown in this report (see sect. II.J.3 above). For example, in 2010, a memorandum of understanding was concluded between the OSPAR Commission and the International Seabed Authority. Along with the draft memorandum, the OSPAR Commission submitted a request for observer status in the Assembly; both were approved by the Assembly at its session in April 2010. A collective arrangement between competent authorities on the management of marine protected areas beyond areas of national jurisdiction in the OSPAR Convention area is also being developed for consideration by the 2011 meeting of parties to the Convention.[317]

250. In the context of the establishment of specially protected areas of Mediterranean importance, the Regional Activity Centre for Specially Protected Areas intends to develop joint activities with the secretariat of the Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Neighbouring Atlantic Area, the General Fisheries Commission for the Mediterranean and IUCN. The group of experts convened in March 2011 under the auspices of the Mediterranean Action Plan (see para. 175 above) included representatives from the Division, FAO, the Regional Marine Pollution Emergency Response Centre for the Mediterranean Sea, the General Fisheries Commission for the Mediterranean, the Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Neighbouring Atlantic Area, IUCN, non-governmental organizations and civil society. Consultative mechanisms such as those could be further promoted.

251. Agreement on common principles and goals for spatial management, as well as global guidance on implementation would also be beneficial to promote more coherent policies and practices.[318] Pursuing marine spatial planning on a regional scale could provide a framework for cross-sectoral cooperation and management, minimizing conflicts between uses and stakeholder consultation.[319]

G. Marine genetic resources

252. Divergent views continue to be held with regard to the relevant legal regime for activities related to marine genetic resources beyond areas of national jurisdiction.[320] The General Assembly continues to note the discussion on the relevant legal regime on marine genetic resources in areas beyond national jurisdiction in accordance with the Convention and to call upon States to further

[316] See note 9 above.
[317] See note 313 above.
[318] See note 9 above.
[319] Ibid.
[320] A/63/79, paras. 36 and 37.

consider this issue in the context of the mandate of the Ad Hoc Open-ended Informal Working Group, taking into account the views of States on Parts VII and XI of the Convention, with a view to making further progress on this issue.

253. At the 2010 meeting of the Working Group, several delegations also called for strengthening the role of the Working Group, including with a view to adopting specific provisions to regulate access to marine genetic resources beyond areas of national jurisdiction and exploitation. A proposal was made that the United Nations should urgently initiate a negotiating process with the aim of defining the legal aspects related to marine biodiversity beyond areas of national jurisdiction, including the establishment of an institutional structure responsible for the management and conservation of the resources (A/65/68, para. 74).

254. The Economic Commission for Africa noted that the recommendations of the Working Group would provide developing countries, especially African countries, with needed information for consideration of the relevant legal regime on marine genetic resources in areas beyond national jurisdiction.[321]

255. The FAO secretariat suggested that the International Treaty on Plant Genetic Resources for Food and Agriculture could serve as a useful reference for a practical and working framework for multilateral benefit sharing within the United Nations system, as witnessed by the more than 90,000 transfers of genetic material in its first seven months of operation.

256. The adoption of the Nagoya Protocol by the tenth meeting of the Conference of the Parties to the Convention on Biological Diversity, in particular its article 10 (see para. 68 above), and its implementation may provide further opportunities to inform and advance the discussions on marine genetic resources, including by providing examples of how the sharing of benefits from the utilization of resources from areas within national jurisdiction may be addressed in a multilateral context.

H. Cross-sectoral cooperation and coordination

257. Enhanced cooperation and coordination between sectors and among States and intergovernmental organizations is essential in efforts to improve the conservation and sustainable use of marine biodiversity beyond areas of national jurisdiction. In this regard, actions to address cross-cutting issues, such as marine debris, invasive alien species, climate change and ocean noise (see sect. II.I above), which have multiple sources and cumulative effects, will only be effective if they are based on corresponding cross-sectoral approaches.

258. The importance of increased cross-sectoral cooperation and coordination and the need for modern approaches to oceans governance has been highlighted in many forums, including the General Assembly.[322] In this regard, the General Assembly has repeatedly emphasized that the problems of ocean space are closely interrelated and need to be considered as a whole through an integrated, interdisciplinary and intersectoral approach.[323] It has also reaffirmed the need to improve cooperation and coordination at all levels, in accordance with the Convention, to support and

[321] Contribution of the Economic Commission for Africa.

[322] See, for example, resolutions 65/37 A and 65/38; A/65/68, paras. 11-13; and note 47 above.

[323] See, for example, resolution 65/37 A, preamble.

supplement the efforts of each State in promoting the implementation and observance of the Convention, and the integrated management and sustainable development of the oceans and seas.[324]

259. Efforts continue at all levels to respond to these calls, as detailed in various sections of the current report. At its twenty-ninth session, the FAO Committee on Fisheries further encouraged the FAO secretariat to improve inter-agency coordination with United Nations entities and to continue efforts to raise the profile of the sector in meetings relating to climate change. FAO has also recently initiated the development of the Global Partnership on Climate, Fisheries and Aquaculture, which is a voluntary partnership of 20 international organizations and sectoral bodies. The partnership was developed to draw together potentially fragmented and duplicating climate change activities through a multiagency global programme of coordinated actions and to address the need to raise the profile of fisheries and aquaculture in global climate change discussions.[325]

260. There is also a need to enhance the use of partnerships or cooperative mechanisms between intergovernmental organizations, industry organizations and non-governmental organizations to reduce duplication and ensure optimal use of the unique expertise and mandates of each. The drive and momentum for such rationalization must come from member States and donors by ensuring that the organizations that serve them work to maximum efficiency within their mandates and cooperate with partners in areas where those partners have competitive advantages. This could also be facilitated by a stronger role for coordinating institutions, such as UN-Oceans.[326]

261. At the national level, continued and strengthened efforts to improve capacity for integrated approaches are required and must include attention to building or reinforcing cooperation and communication between agencies responsible for different mandates and sectors. Excessive sectoral and institutional fragmentation and conflicting priorities at the national level will hinder global efforts towards responsible, integrated and sustainable approaches to governance.[327]

IV. Key issues and questions for which more detailed background studies would facilitate their consideration by States

262. Notwithstanding past and present efforts and initiatives to increase knowledge of marine biodiversity beyond areas of national jurisdiction, significant knowledge and information gaps still exist. At the 2010 meeting of the Working Group, some delegations recalled that the need for further studies should not be used as a reason to delay the development of measures for the conservation and sustainable use of marine biodiversity beyond areas of national jurisdiction (A/65/68, para. 78).

263. A number of proposals were made for further studies (see, in particular, A/65/68, para. 80).

---

[324] See, for example, resolution 65/37 A, preamble.

[325] See note 163 above.

[326] See note 307 above.

[327] Ibid.

264. The present report also highlights some areas requiring further studies. In particular, the extent to which the following activities occur beyond areas of national jurisdiction, and their impacts in those areas, may require further attention: research for and exploitation of marine genetic resources, carbon sequestration, ocean fertilization, development of renewable energy, laying of submarine cables and pipelines, aquaculture, tourism. The impacts of alien invasive species, marine debris, climate change and ocean noise also merit further attention. In their contributions to the present report, a number of organizations also highlighted areas for further work and studies, which are outlined below.

265. In the field of marine science, the IOC secretariat noted the need for comprehensive scientific observations to advance from a precautionary to a preventive approach in relation to the selection of marine protected areas in open oceans (see sect. II.J.3 above). The need for further comprehensive scientific observations and data from different fields of study, including biology, geography, geology, geomorphology, oceanography and socio-economics, was also emphasized.[328]

266. In relation to fisheries, the FAO secretariat noted that emphasis should be given to understanding and addressing the technical, ecosystemic, political and legal challenges deriving from the trend of moving aquaculture activities seawards, and increasingly to areas beyond national jurisdiction. The secretariat of the Commission for the Conservation of Antarctic Marine Living Resources noted that the Commission's Scientific Committee had identified three priority areas for its work over the next three years in the Southern Ocean: feedback management of the krill fishery; assessment of toothfish fisheries, especially in exploratory fisheries; and marine protected areas. Other key research areas identified included vulnerable marine ecosystems and climate change. The secretariat of the North-East Atlantic Fisheries Commission called attention to the need for further study to understand how climate change affects the major fish stocks in the North-East Atlantic.

267. Regarding marine genetic resources, the results of the Census of Marine Life have shed light on research still needed. In particular, the International Census of Marine Microbes drew attention to the need for future research on the temporal dimension of changes in microbial community structures. A number of questions for further research were highlighted, including why some groups dominate marine habitats globally, why there is a division between the community structure of pelagic and benthic habitats, whether the most diverse taxa are also the most numerically abundant, what kinds of taxa are associated with plants and animals and to what extent they are unique to each species (see also para. 19 above). The FAO secretariat, in its contribution, stated that the elaboration of a new legal regime might warrant further study owing to the fact that the United Nations Convention on the Law of the Sea was focused on fisheries.

268. Understanding and addressing the issues which accompany developments related to marine renewable energy requires additional scientific research. Consideration of the possible need for additional regulation at all levels would be beneficial. The 13th meeting of the Informal Consultative Process, which will focus

[328] Contribution of IOC.

on marine renewable energies,[329] will provide an opportunity to discuss these and other issues.

269. On governance, the IOC secretariat stated that work was needed to compile relevant existing legal instruments and define clear governance for the management of areas beyond national jurisdiction, noting that the United Nations Convention on the Law of the Sea and the Convention on Biological Diversity should underpin any initiative.

V. Conclusions

270. The importance of marine biodiversity, including beyond areas of national jurisdiction, for global food security, healthy functioning marine ecosystems, economic prosperity and sustainable livelihoods cannot be overstated. In recognition of this, Governments, gathered at the high-level events of the General Assembly in September 2010, have renewed their commitments to the sustainable management of biodiversity and ecosystems which contribute to achieving food security and hunger and poverty eradication. The present report note the work of various global and regional organizations and entities which have taken encouraging steps towards the conservation and sustainable use of marine biodiversity beyond areas of national jurisdiction, including through cooperative mechanisms.

271. Yet, the cumulative impacts of human uses and human-induced environmental changes, such as climate change and ocean acidification, continue to take their toll on vital marine ecosystems. Further actions and cross-sectoral cooperative mechanisms are, therefore, necessary to understand and address the impacts of various sectors on marine biodiversity beyond areas of national jurisdiction, taking into account the interconnectivity among marine ecosystems as well as between sea, land and air. Owing to the specificities of areas beyond national jurisdiction in terms of, inter alia, governance, legal regime as well as geographical and ecological conditions, global guidance is necessary on ways to adapt and implement, in a coherent and multidisciplinary manner, management tools commonly used within national jurisdiction. This is particularly needed in regard to environmental impact assessments and area-based management tools. Information sharing on planned or current activities and their potential impacts, as well as on best practices and capacity-building needs, underpins the success of measures taken for the conservation and sustainable use of marine biodiversity beyond areas of national jurisdiction. In that regard, making full use of existing mechanisms to facilitate information sharing would be beneficial.

272. Strengthening the capacity of States and various actors and stakeholders to contribute to expanding our knowledge of marine ecosystems, their functioning and resilience is critical, as is the development of capacity to implement relevant international instruments and management tools and approaches, such as environmental impact assessments, ecosystem approaches and marine spatial planning. In addition to improving the capacity to adopt and enforce appropriate preventive and response measures, political will and the capacity to address the underlying causes of marine biodiversity loss are also crucial.

[329] General Assembly resolution 65/37 A, para. 231.

273. As highlighted in another context, conserving biodiversity cannot be an afterthought once other objectives are addressed: it is the foundation on which many of these objectives are built.[330] Marine biodiversity beyond areas of national jurisdiction is no exception. Our efforts for the conservation and sustainable use of marine biodiversity must match the scale and magnitude of the challenges that it faces.

274. The General Assembly, through its Working Group, is the only global institution with a multidisciplinary and cross-sectoral perspective and competence on all issues related to marine biodiversity beyond areas of national jurisdiction. It is, therefore, uniquely placed to review progress, identify what additional actions might be required at various levels and galvanize the necessary political commitments. The convening of the Rio+20 Conference in Brazil in 2012 presents a timely opportunity for the General Assembly to provide the policy guidance required to facilitate the consistent and uniform application of the United Nations Convention on the Law of the Sea and other instruments relevant to the conservation and sustainable use of marine biodiversity beyond areas of national jurisdiction for the benefit of present and future generations.

[330] Foreword by the Secretary-General of the United Nations to the third edition of *Global Biodiversity Outlook* (2010).